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SEPTEMBER 1942

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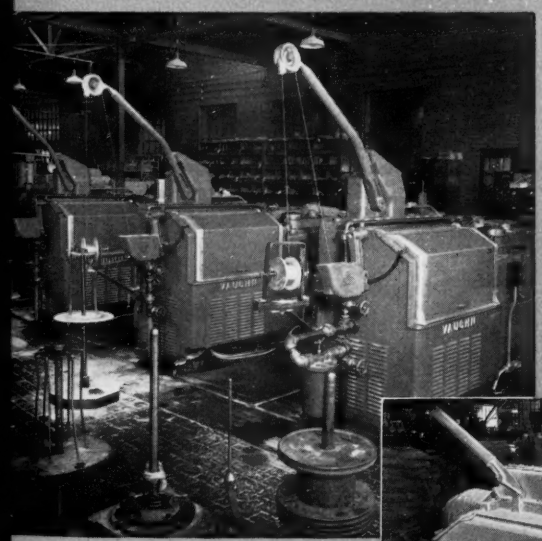

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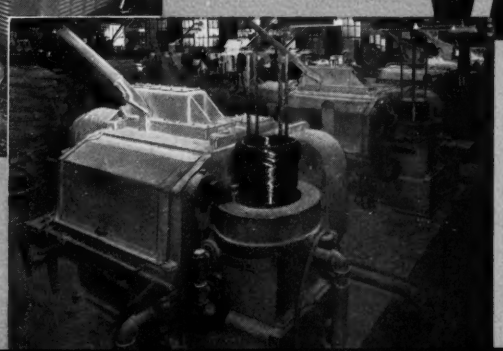

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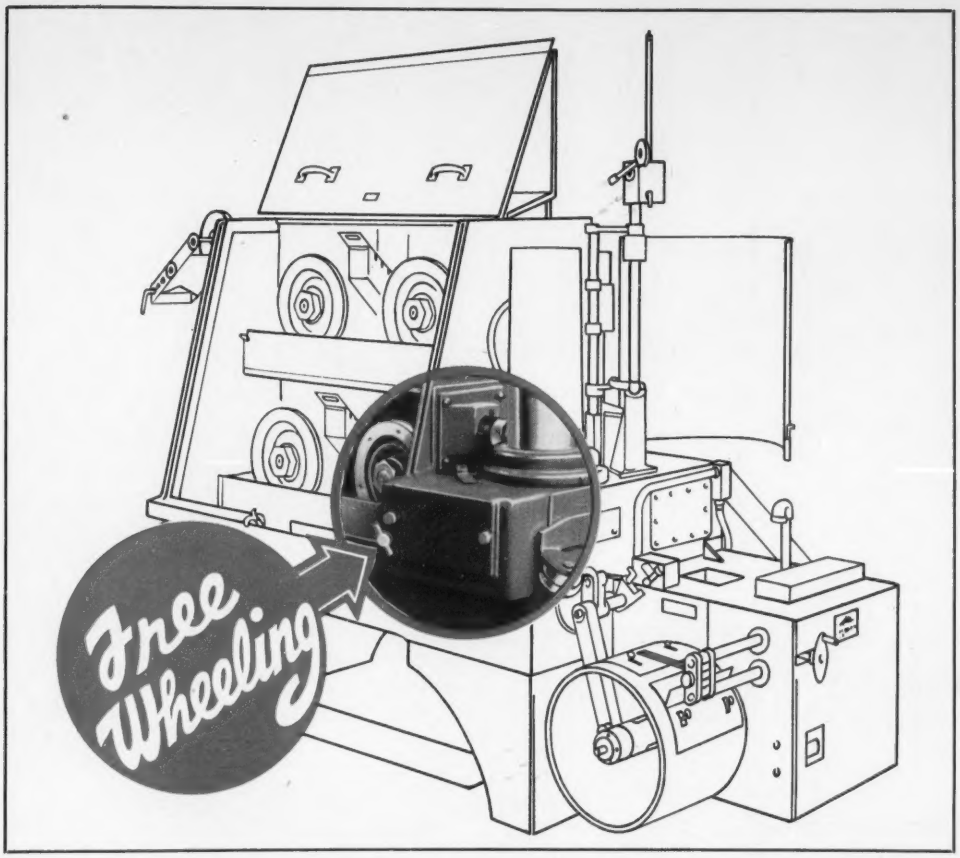

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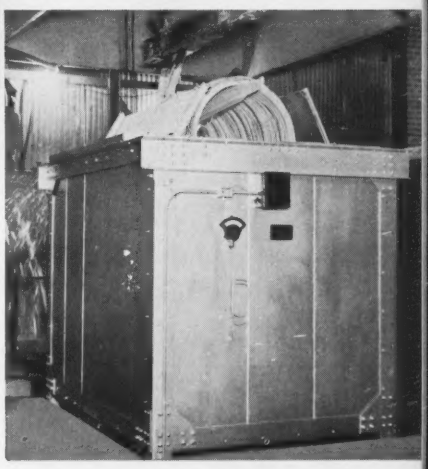

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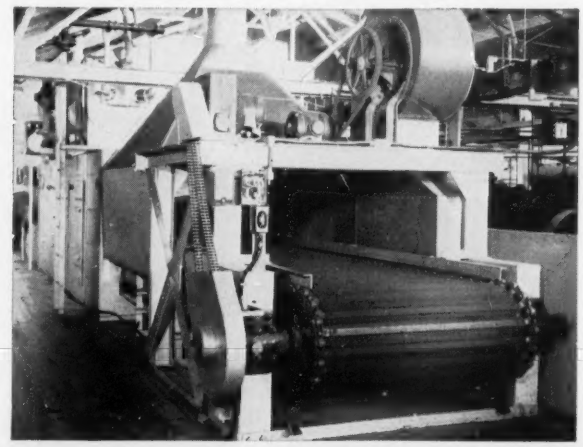

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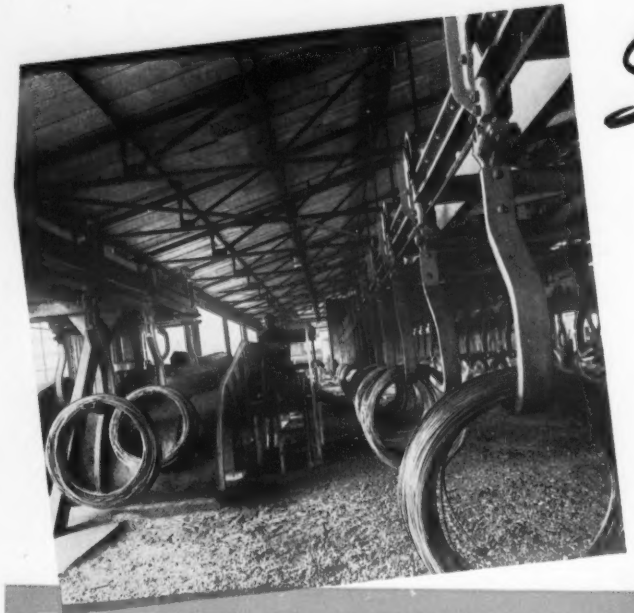

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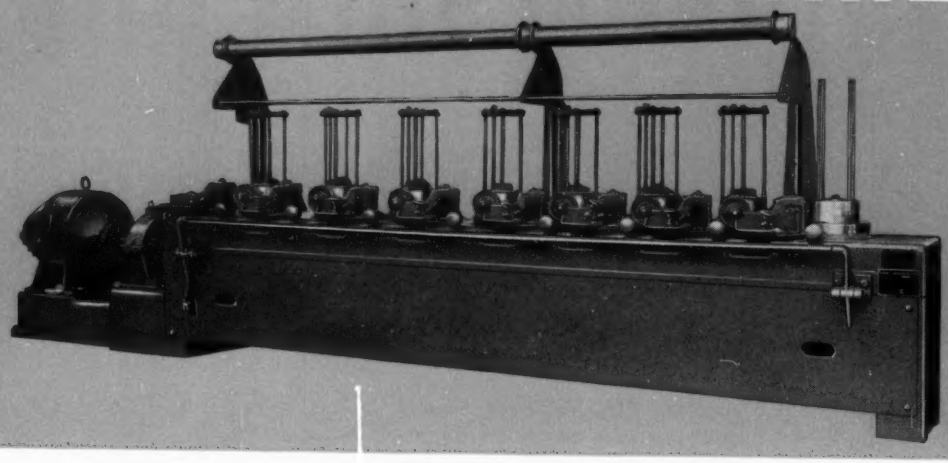

WIRE AND WIRE PRODUCTS

A monthly publication devoted to the production of Wire, Rod and Strip, Wire and Rod Products and Insulated Wire and Cable

DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING

Vol. 17 SEPTEMBER, 1942 No. 9

Designated as

Official Publication By The Wire Association

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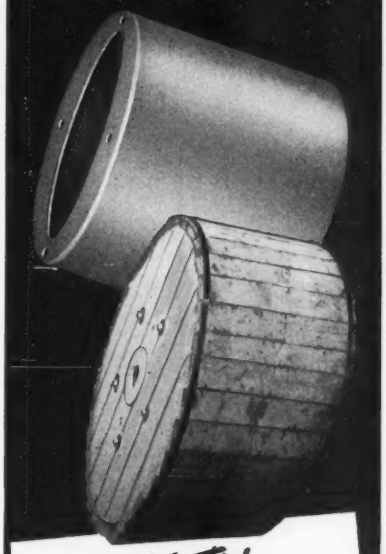

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A monthly publication devoted to the production of Wire, Rod and Strip.
Wire Products and Insulated Wire and Cable.
DRAWING --- ROLLING --- EXTRUDING --- FORMING --- FABRICATING

Vol. 17 SEPTEMBER, 1942 No. 9

Modern Wire Enameling Equipment

By O. S. Haskell

Industrial Heating Engineering Department
General Electric Co., Schenectady, N. Y.

Equipment for the manufacture of film-coated wire should have the following features: simplicity of design, interchangeability of parts, and flexibility of layout. It should be designed for manufacturing both film-coated wire of the polyvinyl-acetal type using the floating die method of application, and conventional enameled wire using the dip method.

✦ ✦ ✦ ✦ ✦

IN the manufacture of wire a very wide range of wire sizes must be considered. The following terminology has been adopted by the **General Electric Co.** to cover the various ranges of wire sizes, the letters giving some indication of the size of the wire:

1) **Type FFF (very fine) for sizes smaller than 40 gauge.**
2) **Type F (fine) wire sizes 32 to 40 gauge inclusive.**
3) **Type I (intermediate) wire sizes 24 to 31 gauge inclusive.**
4) **Type M (medium) wire sizes 16 to 23 gauge inclusive.**
5) **Type H (heavy) wire sizes 8 to 15 gauge inclusive.**
6) **Type C (coarse) round wire larger than 8 gauge, and rectangular wire.**

✦ ✦ ✦

SHOWN in Figs 1, 2, and 3 are typical equipments for the enameling of types FFF, H, and I and M, respectively.

✦ ✦ ✦

COMPLETE equipment for the manufacture of film-coated wire usually consists of the following essential parts:

1) **Wire supply system**
2) **Annealing oven**
3) **Necessary guide sheaves**
4) **Sheaves and supports at each end of the enameling oven**
5) **Applicator for polyvinyl-acetal type enamel, or dip tank for conventional enamel**
6) **Dies for application of polyvinyl-acetal enamel**
7) **Enameling oven**
8) **Fume exhaust system**
9) **Capstan for pulling the wire through the equipment**
10) **Pick-up mechanism**
11) **Recirculation and filtering system for the enamel**
12) **Lighting system**
13) **Necessary control equipment**
14) **Wire brazing equipment**
15) **Viscosity control system for certain types of enamel**

✦ ✦ ✦

O. S. HASKELL

O. S. Haskell was graduated from the U. S. Naval Academy in 1919. Served for six years as an operating engineer in the Navy. In 1929 entered factory training course of the General Electric Company, following which he was in the manufacturing department. For 11 years has been in the Industrial Heating engineering department of the company, at Schenectady, N. Y.

CONSIDERING these items as listed, the following are some of the details affecting the design:

✦ ✦ ✦

Wire Supply System

FOR handling wire supply reels where the total weight of the reel and wire is less than 100 lbs., it is possible to assemble the supply head in various layouts. Usually a vertical spindle is used, although in some layouts the horizontal spindle requires less space, particularly if the operator is able to lift reels of this size to shoulder height from the floor. For supply reels weighing more than 100 lbs., it is desirable to handle the reels at floor level; otherwise the reels have to be handled with overhead lifting devices, which usually

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do not fit readily into the layout. In any case, it is desirable to design the spindles as individual heads which will allow for a variety of arrangements or changes in arrangement.

✦ ✦ ✦

Annealing Oven

IT is evident that if hard bare wire can be supplied to the enameling department, for the complete wire range of sizes, and annealed continuously between the wire supply system and the enameling oven, a considerable saving can be made in annealing costs. Also, when using the die method of applying enamel for polyvinyl-acetal wire or other synthetic covering, the operation is greatly improved by the introduction at this point of an annealing oven which assures that the wire entering the applicator will be straight. Where annealed wire is used in the supply system, many kinks in the wire occur as the wire is unwound; this usually results in an eccentric coating of enamel film. Therefore, the use of the annealing oven in line with the enameling equipment cuts the cost of the operation and, at the same time, assures a better finished product.

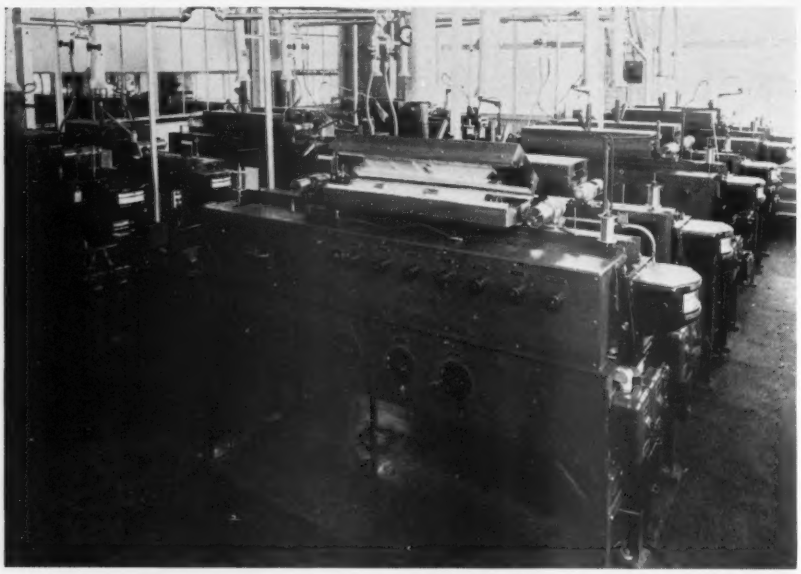

Fig. 1. Equipment for enameling of ultra-fine wire at wire plant.

✦ ✦ ✦

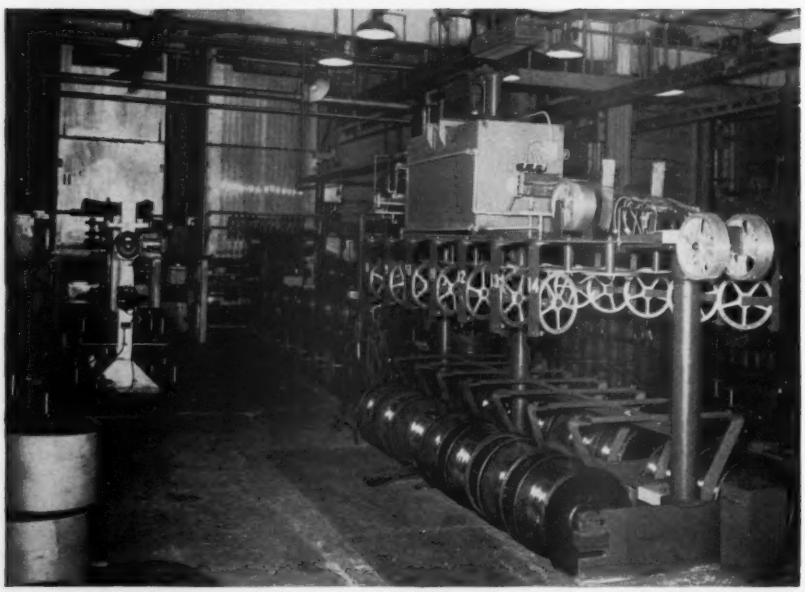

Fig. 2. Arrangement of Type H. polyvinyl-acetal wire enameling equipment. Supply system in right foreground. Pre-annealing oven overhead. Capstan, pick-up mechanism, and oven in background.

✦ ✦ ✦

SO that it will fit into the average layout compactly, the annealing oven should be as small as practical, thus making desirable a forced convection system since such a system provides an effective heating length greater than one without forced convection. To prevent oxidation of the wire, the dried products of combustion of coke oven gas, natural gas, or low-pressure steam can be used for an oven atmosphere, or the oven should be so constructed that it will prevent oxidation of the wire. If coke oven gas is used, care must be taken to prevent sulphur discoloration.

✦ ✦ ✦

Necessary Guide Sheaves

THE guide sheaves from the wire supply heads to the annealing oven (as they are handling hard wire) need be only of sufficient size to allow a bend which will hold the wire in the sheave with a minimum of tension. Between the annealing oven and the enameling oven, however, it is necessary to use fairly large sheaves to prevent subsequent hardening of the wire from bending. Also reverse bends should be eliminated as far as possible. Tests have shown that in the Type I range, 8″ diameter sheaves are practical and, for sizes larger than the I range—that is, in the Type M and Type H range—14″ diameter sheaves are practical. In the Type C range, 24″ sheaves should be used.

✦ ✦ ✦

Sheaves and Supports at Each End of Enameling Oven

THESE should be of a size as indicated in the above paragraph on guide sheaves. The wire tensions involved will be less if each sheave is mounted on its own individual ball bearing, thus making the sheave steadier so that it will feed the wire into the applicator without wobbling. If manufacturing conventional type enameled wire where a dip tank is

used, it is impractical to use ball bearings for the oven sheaves. Then, the sheaves should be mounted on sleeve bearings and the shaft should turn on ball bearings.

✦ ✦ ✦

Enamel Applicator

THE enamel applicator to be used with the die method should be designed to allow for careful alignment in two directions on a horizontal plane. This alignment, when once set, should be marked in such a way that the applicator can be replaced in exactly the same spot after being removed for cleaning. This necessitates mechanical movement in two directions. So that it can be removed easily for cleaning, the applicator should have no permanent piping connection, and preferably should slide in place without the necessity of removing bolts or other holding devices.

✦ ✦ ✦

THE applicator tank is constructed with one side flared out in which are cut vertical slots slightly larger than the largest diameter wire to be processed. As the wire passes upward through the slots into the bath, it picks up more enamel than it needs for one coating; this excess is removed by passing the wire through a die.

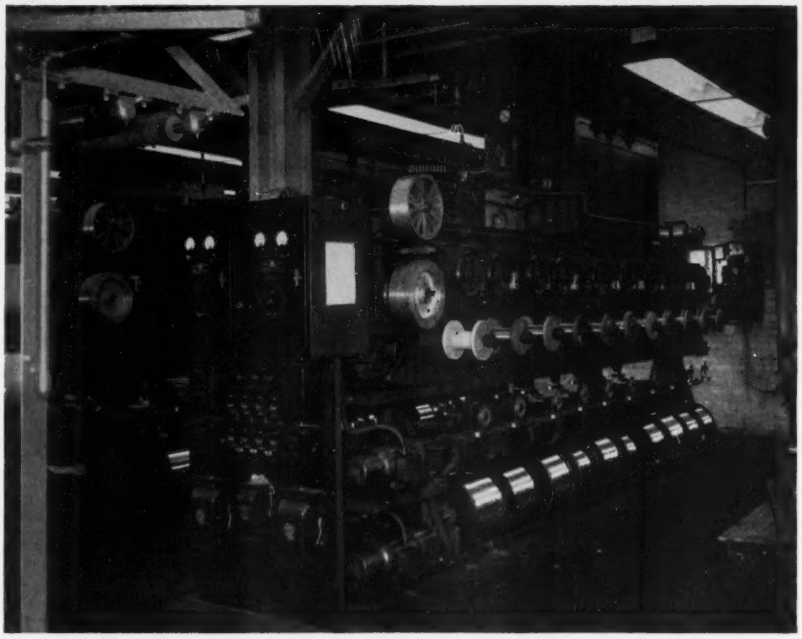

Fig. 3. Arrangement of individual supply reels, capstans individual pick-up heads, pre-annealing oven, and electric control equipment for wire enameling. (Types I and M)

✦ ✦ ✦

Dies

AS many different sizes of dies are required for this process, first cost is of importance. The die must be designed and held in such a way that it can move in three dimensions, allowing the wire itself to center the die, with the enamel acting as a lubricant. The die must also be easily assembled. The ordinary type is a split die made of phosphor bronze or of similar material. The hole which determines the size of the die is made at the center of the split section. The die should be so constructed that it can be removed and reassembled many times without losing its tension. Normally the die blanks are carried in stock and the holes made as required for production. The hole size varies according to the base content or the viscosity of the enamel used, and the required build-up of enamel coating.

✦ ✦ ✦

IN the Type F and Type FFF equipment, a roller-type die of hollow-cylinder shape is used in place of the split floating die. These roller dies are mounted in multiple on a single driven shaft.

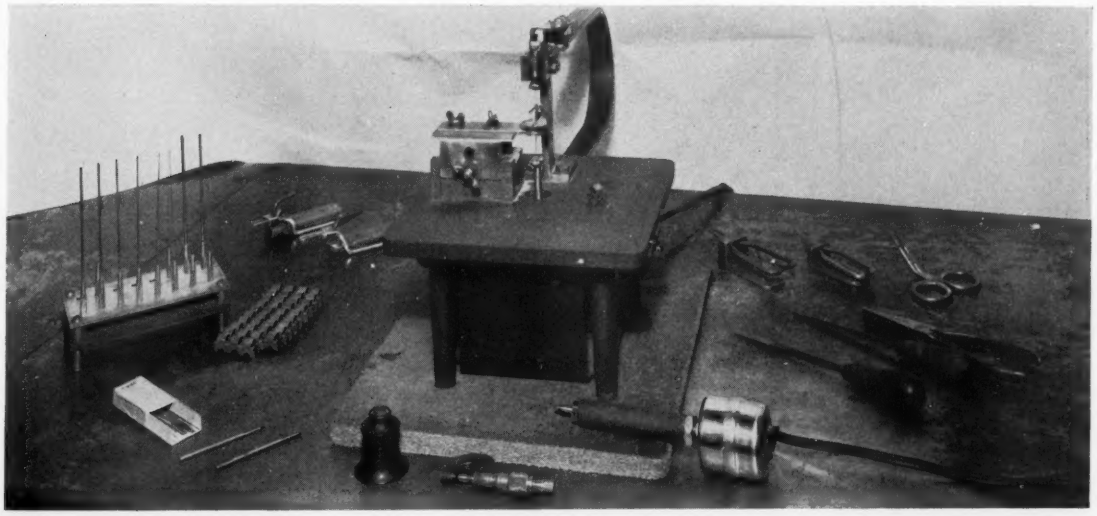

Fig. 4. Equipment used in sizing die holes.

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As the wire passes through a V-shaped groove in the perimeter of the cylinder, a finger presses down upon the top of the groove thus making an orifice in the shape of an equilateral triangle through which the wire passes.

✦ ✦ ✦

AS the die is really the heart of the enameling process, the manufacture should be carefully checked in every detail. The control of dies sent to the factory and returned to the die room should be handled in somewhat the same manner as the control of wire drawing dies. They should be carefully checked "in" and "out" as to size and condition.

✦ ✦ ✦

FIG. 4 shows equipment used in sizing die holes.

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Enameling Ovens

THE Type FFF and Type F ovens, being short ovens, are usually built horizontally to allow for easier use of the roller-type die, easier stringing, and better fuel economy.

✦ ✦ ✦

IT should be noted here that the principal reason for using the roller-type die instead of the split floating die for wire sizes below 30 gauge is that brazes are very difficult to make in this size of wire at the high handling speeds involved, and the roller-type die allows a knot in the wire to pass through, while the split-type die does not. Moreover, since more breaks occur in the smaller size wire than in the larger, more tie-ups or brazes are necessary; these are more difficult to handle with the split-type die than with the roller-type.

✦ ✦ ✦

EXCELLENT wire has been made in vertical ovens in the smaller sizes of wire down to approximately 34 gauge, but the production operation is not as successful or economical as when using the horizontal oven with the roller-type die.

✦ ✦ ✦

IN making wire sizes 30 gauge and larger, vertical ovens are used. Since the length or height of the oven is often limited by headroom, these ovens are built in sections for easy installation as well as flexibility. If the ovens ever have to be moved, this construction permits them to be disassembled and moved without destroying any of the parts. The heating sections are made with easily removable and replaceable electric heating units. Each oven constructed has a multiplicity of heating elements, each element having an individual control so that the necessary gradient can be adjusted over the whole length of the oven.

(*Please turn to Page 476*)

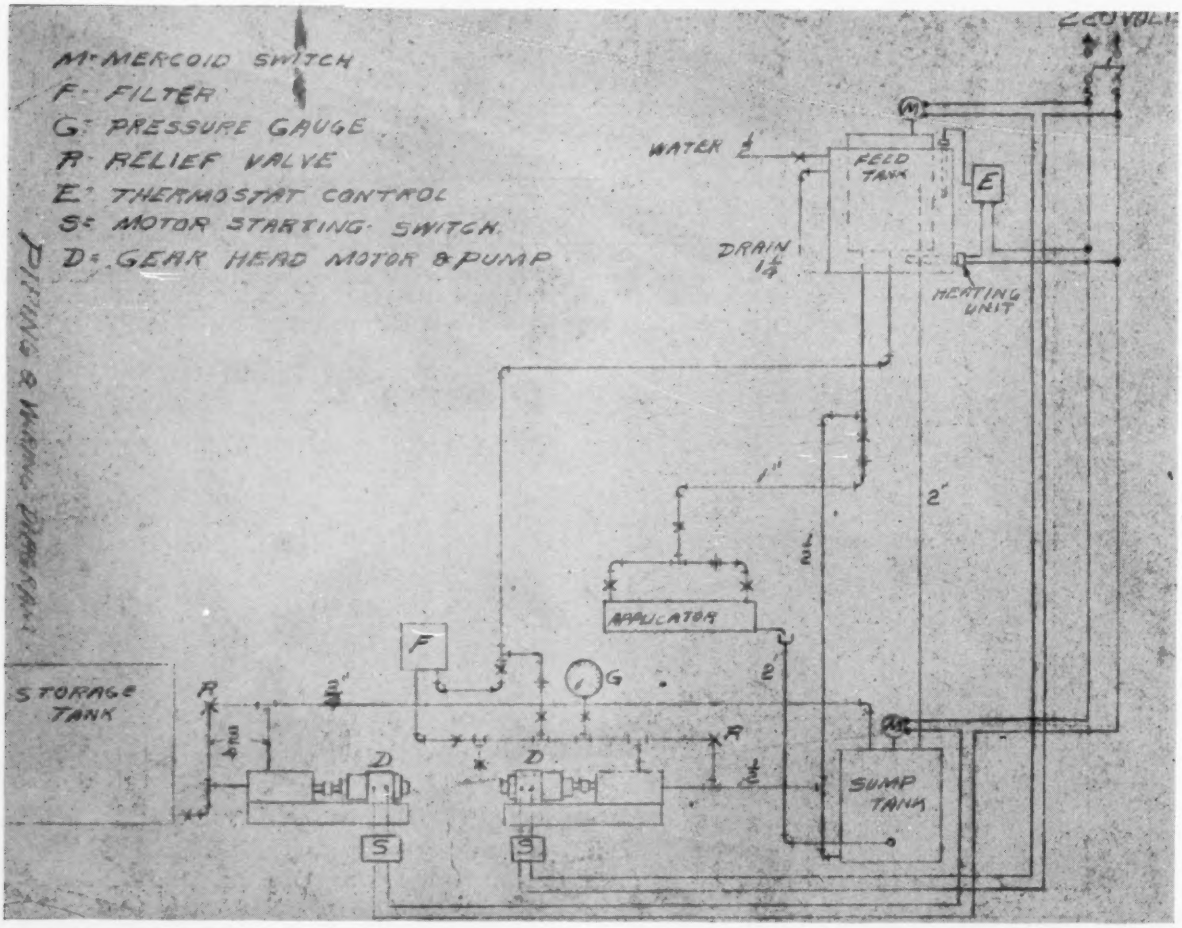

Fig. 5. Diagram showing typical recirculation and filtering system for enamel.

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Safeguarding A Plant Against Sabotage And Espionage

By James W. Irwin,
Assistant to President,
Monsanto Chemical Company, St. Louis, Mo.

Physicial protection such as fences and floodlights; a well-equipped, well-trained police force and methods of employee identification are discussed here by Mr. Irwin as important elements in Monsanto's System for protecting its personnel and plant against the many dangers of wartime sabotage.

WARTIME conditions impose upon management sharply increased responsibility for protection of manufacturing plants from malicious damage, and employees from injury because of the action of saboteurs. The protection of industrial facilities and personnel is a responsibility to stockholders that management must carry out just as religiously as it does the protection of the financial and other interests of the owners. This responsibility has always existed, but has sometimes been overlooked in the press of normal peacetime problems. With the nation at war, plant protection becomes not only a company responsibility, but a matter of community and national interest as well.

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PLANT protection involves the prevention of deliberate and malicious damage to manufacturing facilities, products, and related property by individuals seeking to hinder industrial production for war. In this sense it does not include the regular protection and safety programs, although these should be tied in closely.

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BASED upon experience in the first World War and during the present conflict up to this time, there are two approaches that potential saboteurs can take. One approach is through individuals who normally have access to the manufacturing property—employees, service men, suppliers of raw materials, and employees of contractors and other firms doing work on the property.

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THE second hazard arises from those attempting to gain access by force or subterfuge. These points of vulnerability are of equal importance, and although they are handled in different ways, protection against them must be coordinated to insure effectiveness. Even the strongest fences are of little effect when outsiders can bluff their way through the main gate or ride in as a truck-driver's helper.

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ALTHOUGH protection of plants producing chemicals encounters a problem peculiar to them, the procedure used by Monsanto Chemical Company is generally applicable to most manufacturing establishments. At plants of this company, strict measures have been enforced for two years in anticipation of war conditions, but these have only supplemented those which had been followed for many years.

✦ ✦ ✦

IN order to prevent unauthorized persons from gaining access to manufacturing facilities as employees, every new employee is fingerprinted, and the prints are cleared by the office of the executive vice-president with the Federal Bureau of Investigation. Applicants for work are investigated to the extent of uncovering any connection which would tend to place them in a "suspect" category. Despite the thoroughness of such prior investigations, the number of applicants rejected on the basis of the findings is virtually negligible. This makes apparent the fact that the mere existence of such measures tends to discourage application for employment by persons who know that their background would bar them or, if employed, make them suspects in the event of untoward incidents.

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Identification Methods

ALL employees, from the office boy to the president, are issued photographic identification passes. These passes must be presented when entering the property, and in some cases on leaving. This system, of course, must be implemented by clear and definite instructions to plant policemen, to insure that the passes are closely examined when presented. In the larger operations, the passes are supplemented by a system which requires every employee to wear a numbered button while on the property, so that anyone without such a button is subject to immediate detection by supervisors and operators.

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EMPLOYEES visiting a plant or temporarily at work there are issued special buttons which must be worn conspicuously at all times. Employees of construction contractors working within the plant enclosures are provided with special badges and, where physically

(*Please turn to Page 479*)

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200 SPRINGS per MINUTE!

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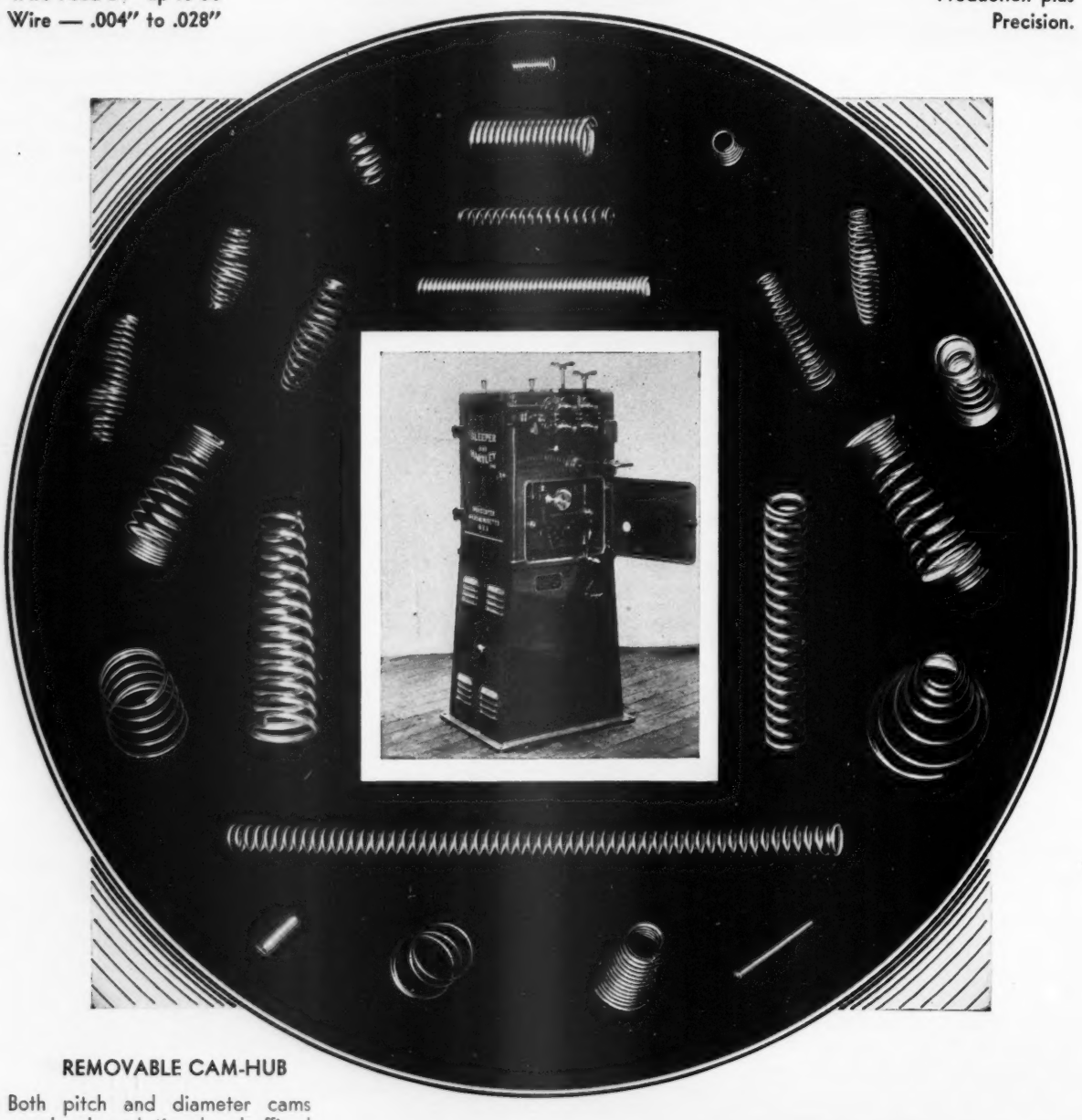

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Streamlining Pickle-House Procedure

By John H. Richards, Jr.,
Chemical Engineer
Technical Consultant for Apex Alkali Company,
Philadelphia, Pa.

THIS brief article is presented in the proven belief and based on the tested premise, that normal pickle or cleaning-house procedure as ordinarily practiced in wire mills today may be improved upon, and production speeded up by, the complete elimination of several unnecessary operations heretofore deemed necessary, and at the same time definitely improving the required finish, while further appreciably reducing the cost per ton of finished rod or wire.

✦ ✦ ✦

QUITE recent rather unique developments in the fields of wire cleaning and wire coating have been accurately experimented with in the laboratory, further carefully tested and improved upon in the small-scale development stage, and finally checked thoroughly and approved in actual wire-mill practice.

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IN modern wire-mill practice today, it is fast becoming imperative to insure absolutely thorough, and yet speedy, cleaning of the wire, not merely by employing the usual muriatic acid dip (whose purpose is to remove all impurities and foreign matter from the wire surface of a mineral nature and in particular the complete removal of all anneal-scale) and then a cold water rinse; but to augment this pickling step with a wash in some one of the commercially available alkaline cleaning compounds (whose purpose is to remove all impurities not normally affected by the acid). Under this category we may safely include most oils, greases and soaps normally employed in the drawing of wire. (Their presence on the wire surface will vary in a greater or lesser degree, dependent upon the nature of the lubricant used; but when present in any degree, will definitely interfere with and quite materially decrease the essential adherence of the subsequent lime coat or coats, whether a heavy or light-lime coating be contemplated.) It has become rather common practice heretofore to follow this wash also with a hot water rinse, and then to proceed to the lime tub or tubs. The introduction of a recently developed formula (primarily a coating and cleaning compound) into the tub heretofore employed for the alkaline wash will completely do away with the hot water rinse formerly found necessary, greatly speeding up the production line, as well as freeing another tub for more urgent uses. The complete elimination of this hot water rinse tub also means more steam when needed in more essential places.

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THE initial installation and setting-up of the required equipment necessary to employ this cleaning and coating operation is simplicity itself, and in most cases no additional equipment at all is necessary, due to the fact that the tank no longer necessary in the cleaning-house line (the aforementioned hot water rinse tank) may be re-employed for the suggested cleaning and coating material. The material in question is completely soluble in water, requires only the usual steel tank equipped with open or closed steam coils for heating, and is powder-fine in form and non-toxic.

JOHN H. RICHARDS, JR.
Chemical Engineer, formerly Asst. Pharmacist, City Drug Co., Chicago, Ill. Since 1933 Technical Advisor, Apex Alkali Products Co., Philadelphia, Penna.

✦ ✦ ✦

IN many wire mills at the present date, so-called "wet-storage" of wire coils about to be wet-drawn is practiced. This method of storage is not only unnecessarily wasteful of valuable space so urgently needed in today's Production Drive, but becomes very objectionable to the workers in the winter-weather handling of the coils, when they must frequently plunge up to the elbows in frigid water in order to obtain the wanted wire coils. Many modern mills have eliminated these objectionable features by employing this suggested and improved method of coating which only requires one to:

(1) Dip all wire coils to be wet-drawn into this compound;
(2) Remove and allow to air-dry for thirty seconds;
(3) Store the coils in any size piles, one on top of the other, roof-high if desired, for any period of time, with no danger of oxidation or rusting taking place. Coils so stored may, when ready for subsequent drawing, be copper-coated or blue-stoned in the usual manner. No rinse is necessary to remove the oxide or rust inhibitor. In actual mill practice it has been proven that the suggested coating material actually provides an excellent base for the copper-coating, producing a firmer bond between the copper-coat and the wire surface. The finish is much improved by the employment of this new technique.

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THE oxidation and rusting of wire-coils and rod-bundles may be due to various reasons, several of the more common of which are herewith listed, and all

of which may be overcome by the proper application of the suggested coating compound:

(1) **Hold-ups in processing, during which time oxidation takes place from the moisture in the atmosphere.**

(2) **Handling by men in warm or hot weather, when the saline nature of perspiration causes almost instant rusting.**

(3) **Excessive humidity in the atmosphere, or high barometric pressure, causing steam from open tanks and boilers to hang low near the stored coils or bundles. Under actual operating conditions, coils of wire and rod-bundles were actually stored in open sheds, with only a roof for protection against the elements, for a three-month period. Test conditions were conducted during the three wettest winter-spring months. The results of this test were sufficiently positive to convince one of the country's largest producers of wire cable that the inclusion of such an operation was distinctly to their advantage.**

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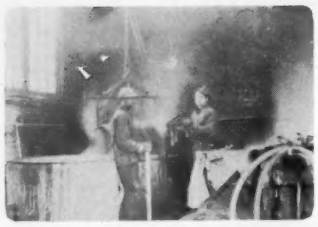
AS sometimes unfortunately happens under the best of circumstances, the baking ovens in an Eastern Wire Mill broke down recently, and the liming of rods and coils was just out of the question temporarily. Thus all wire drawn in this mill for a period of several days was drawn without lime, the suggested coating material providing the necessary base for any and all lubricants used anywhere along the line. This would seem to suggest that in some cases comparable to the above, liming of rods may be eliminated altogether through the use of this coating and cleaning material. The above-mentioned incident involved the drawing of 40 per cent carbon wire. It is hoped that further data will soon be available to the writer which may definitely point to the possibility of thus coating wire and rods, eliminating the liming operation altogether.



Coil of High Carbon Wire Being Removed from Tub.

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IT quite often occurs in the cleaning-house, in spite of elaborate rinse-water and spray set-ups following the muriatic acid cleaning operation, that some traces of acid must of necessity be imbedded in the pores of the metal, and just cannot be rinsed off in the usual manner. This objectionable feature may be completely overcome if the suggested coating and cleaning dip be employed. The inclusion of this coating and cleaning compound step, in which is incorporated an extremely efficient wetting agent, coupled with the alkaline nature of the compound itself, positively neutralizes any excess acid which might be carried over from the acid tub. There are very few liquid solutions whose wetting ability cannot be improved upon

(*Please turn to Page 482*)

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PRESIDENT - MANAGING DIRECTOR

WILLARD I. CURTIS
SALES MANAGER

The Manufacturing Specification

By T. W. Fazakerley,
West Wickham, Kent, England

The importance of the manufacturing specification to the wire mill is discussed in a short presentation. ✦ ✦ ✦ ✦

THE efficiency or otherwise of any manufacturing or productive department will depend, to a large extent, upon the sufficiency of the instructions given to it and to the ability of the personnel concentrated there, satisfactorily to translate those instructions into completed units. The normal system of relaying instructions to manufacturing sections in the exact form that they are dispatched by the buyer is one which carries a positive tendency towards negative results. In consequence, it is impossible to place too high a value on the accuracy of the individual manufacturing order.

✦ ✦ ✦

PROCEDURE in most factories, and for that matter in most industries, permits of little variation in stereotyped formality. A customer requires goods and passes that advice to a manufacturer asking at the same time for his price for the manufacture and delivery of specified units or for the execution of defined work. The tentative enquiry, when received by the manufacturer, demands the attention and the consideration of the laboratory, the estimating department and the production planning section. To the net result of their deliberations is added a profit allowance, the resultant figures being the cost price to the enquirer who is so advised. It is not until the quotation is accepted and the order placed for execution that difficulties are liable to occur.

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INSTRUCTIONS to the manufacturing section which will be primarily responsible for the proper execution of the job, must comprise the fullest possible detail if subsequent mis-interpretation and loss are to be averted. The manufacturing order MUST incorporate all data and notwithstanding the apparent triviality of specific demands and requirements on the part of the customer, their inclusion cannot but tend towards the avoidance of unforeseen difficulties which may crop up at a later date.

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THE prime items for inclusion will naturally be quality and quantity, the remaining qualifications being of lesser moment but, nevertheless, essential. The following informative items will constitute the basis of the manufacturing order, additions and amendments following individual or trade usage and customs.

1. **Quality of material.**
2. **Quantity of material or units.**
3. **Wastage allowance both in material and in manufacturing processes.**
4. **Details of individual processes.**
5. **Price rate remuneration for these processes.**
6. **Personnel grades**
7. **Departmental assessment of overheads for the job.**
8. **Inspection details.**
9. **Details of packaging.**
10. **Delivery details including rates and dates.**

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SHOULD the raw material to be drawn from store require processing before actual manufacture is proceded with, then details of these various processes must also be included. The manufacturing order, by adopting the method of including all relevent details, is changed, in effect from a manufacturing order to a manufacturing specification. This specification is compiled by the passing of the original draft through the various departments directly and indirectly concerned in the execution of the order, viz. the laboratory, the department occupied with time-study, the production planners and the estimators.

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Record of Execution

ALTHOUGH the estimating and the costing at the time of original enquiry will have been dealt with thoroughly, there always is the possibility of omission and the incidence of the unexpected. Both factors may influence the anticipated profit and consequently it is advisable to record in a detailed manner, the 'estimated' as given on the manufacturing order/specification and the 'actual' as demonstrated by final results. The reverse side of the manufacturing specification is ideally suited for this purpose, or in default, the arrangement of an additional column on the fact will prove to be equally beneficial. The co-relationship of the two sides of the manufacturing problem, 'before' and 'after' will prove to be of great value when, at a later date, it may be desirable to compare the actual processing costs with those which had been pre-determined.

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Deviations and Alterations

IT should be carefully laid down and adherence rigidly enforced, that there shall be no alteration to a manufacturing order/specification or deviations from its instructions except against the authority from the relative Executive who must personally initial the alteration. The greater is the detail first incorporated into the order, the less will be the necessity

(*Please turn to Page 484*)

War Production Convention Of The Wire Association

FROM the viewpoint of the production man and the mill operating executive, this year's Convention of the Wire Association promises to be the most interesting meeting held to date.

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WITH every effort being made to increase production for war it is obvious that subjects relating to the war effort and matters which would increase production are of primary importance this year.

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TO this end, the Program Committee of the Wire Association has formulated a series of meetings devoted to such subjects as Salvage, Conservation of Scrap and Waste Material, Substitute Materials, the Reduction of Accidents in Wire and Wire Products Operations, Planning a Wire Mill for War Production, New Developments in Tungsten Carbide Applications, Trouble Shooting on Weaving Wire, together with process papers on Welding Electrodes, Pickling and Patenting.

CARL E. JOHNSON
Supt. Rod & Wire Mills,
Bethlehem Steel Company,
Sparrows Point, Maryland
President, The Wire Association

Born Marquette, Mich. Graduate Mining Engineering, Michigan College of Mines (Now Michigan College of Mining and Technology) Houghton, Mich., 1923. While student spent one year working underground and in the open pit mines of the Marquette and Mesabi Iron Ranges. 1923-1925 open hearth department, Bethlehem Steel Company. 1925-1926, Construction Department, Bethlehem Steel Company during construction of wire mill. Upon its completion in 1926 became Assistant Superintendent. In 1927 appointed Superintendent of Rod and Wire Mills.

✦ ✦ ✦

Discussions

IN previous years it has been the custom to have a stenotype operator present to take down the discussions and then in the January issue of WIRE & WIRE PRODUCTS following the meeting, to publish these discussions in full giving the name and title of the participants therein. It has been found that if we omit the name and title of the man asking the question and the member replying thereto that we secure a far greater freedom of expression of opinion than where a man's name and company are published in the proceedings.

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THIS year, therefore, the questions and answers will be published as usual, but the names of the inquirers, etc., will be omitted and merely the words "A Member" substituted.

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IT is intended by following this plan to stimulate discussions and hoped that everyone attending will participate in bringing out points of interest of mutual benefit on the subjects covered by the various speakers.

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PRECEDING the opening of the Convention on Monday, October 12th, at the Hotel Carter, Cleveland, Ohio, the Semi-Annual Director's Meeting will be held. This will be followed by the Annual Program Committee Luncheon at which the Officers, Directors, Members of the Program Committee, Chairmen of the different sessions, and Speakers will be present.

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THE technical sessions of the Convention will formally open at 2:15 P. M. on this day with a short address of welcome delivered by the President, **Mr. Carl E. Johnson,** Superintendent of Rod and Wire Mills, Bethlehem Steel Company, Sparrows Point, Maryland.

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THE arrangement of the Meetings and the topics covered at each meeting are shown on Pages 459 to 461 of this issue of WIRE & WIRE PRODUCTS.

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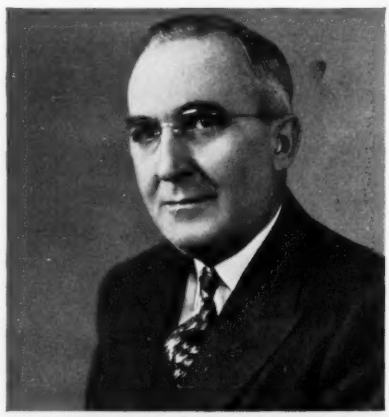
Notes on the Program

MR. IVON B. TILYOU, Assistant Utility Co-ordinator of the Industrial Salvage Section of the War Production Board will



D. D. BUCHANAN
Manager of Operations,
Union Drawn Steel Div., Republic Steel Corp.,
Massillon, Ohio
Vice-President, The Wire Association

Associated with Union Drawn Steel for past eighteen years. He has served in present capacity as manager of operations since 1939. During period 1930-1939 assistant general manager, and prior to 1930 manager of No. 3 plant at Beaver Falls. He started at Cambria Steel Company, Johnstown, Pa., in open hearth and rolling mills departments. Later he was connected with Jones & Laughlin Steel Company, South Side, Pittsburgh, Pa., and with See-Seldon, industrial engineers, in Pittsburgh.

speak on the subject of "The Wire Industry's Part in Industrial Conservation".

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MR. TILYOU was formerly with the New York State Electric and Gas Corporation, the Copper Wire Engineering Association, and the Chase Brass & Copper Company and with this background and experience he is well qualified to speak on this subject.

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HE will discuss how to salvage more iron and steel scrap, more non-ferrous metal scrap, more rubber and in fact more of all the materials needed to produce wire, insulated wire and cable, wire products, etc. The unprecedented requirements which the metal industries are called upon to meet to produce fighting equipment means an unprecedented consumption of metals and an imminent crisis in their supply. How to meet this situation as outlined by the Industrial Salvage Section, of the Bureau of Industrial Conservation of the War Production Board, should be of real interest to all mill operating men.

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The Technical Papers

ALL papers this year are primarily devoted to production processes which will stimulate and aid the war effort. Among the papers which will be presented are the following:

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Reducing Accidents in Wire & Wire Products Operations

By Robert H. Ferguson,
Manager of Safety,
Republic Steel Corporation,
Cleveland, Ohio

METHODS and protective devices developed as a result of many years of experience in the reduction and prevention of accidents in rod and wire mills and the promotion of their use among the men in the mill are fully covered by the author who has had many years of experience in this field.

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Substitute Materials

THIS paper will be presented by an engineer from the **Bell Telephone Laboratories** and pertains to copper wire insulation and deals

RICHARD E. BROWN
Secretary, The Wire Association, Publisher, WIRE AND WIRE PRODUCTS, Stamford, Conn.

with the reduction of crude rubber content in compounds and the substitution of synthetic materials in place of rubber for insulating purposes.

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A PAPER along these lines should be of great interest at this time on account of the critical crude rubber situation.

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Welding Electrodes

By Dr. John W. Miller,
Metallurgist,
Reid-Avery Company,
Dundalk, Baltimore, Md.

NO preprint of this paper will be available. Dr. Miller will deliver an analytical talk covering the steel, the methods of wire drawing and extruding of the electrodes, and the different types of coatings involved.

✦ ✦ ✦

A. M. REEDER
Metallurgical Engineer,
Jones & Laughlin Steel Co.,
Pittsburgh, Pa.
Chairman, Program Committee

The Patenting of Wire

By John P. Zur,
Metallurgical Engineer
The Trauwood Engineering Company,
Cleveland, Ohio

THE paper will outline the main points of importance in continuous strand patenting of wire and will include the effect of wire temperatures, quench temperatures, and time cycles on the physical properties and the drawing qualities of carbon steel wire. There will also be contained, of course, detailed material on continuous patenting by the electric direct resistance method and comparisons of physical and fatigue properties.

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The Scheduling and Planning of a Wire Mill for War Production

By L. D. Seymour, Asst. Wks. Mgr.,
The Steel Company of Canada, Ltd.,
Canada Works,
Hamilton, Ontario, Canada

SCHEDULING and planning of production has played a large part in modern industry, but very little has been done along this line in the wire industry. The modern wire mill is a flexible manufacturing unit, but the war priorities and the shortage of raw materials have curtailed this flexibility. This condition made it apparent that centralized planning or scheduling was necessary if the demands of the time were to be met. In this paper the results of a careful study of this problem are reported, and an explanation of a type of production control which in one Wire Mill is being successfully operated.

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Trouble Shooting on Steel and Bronze Weaving Wire

By L. D. Granger,
Assistant to Vice President,
Wickwire Spencer Steel Company,
New York, N. Y.

THIS paper will stress the necessity of obtaining a uniform wire if the best quality of wire cloth is to be produced. A specific case of lack of uniformity will be noted and a special testing jig described, by the use of which the facts in the case were demonstrated with sufficient emphasis to cause drastic action on the part

of the mill supplying the wire to correct the difficulty.

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Submerged Combustion Takes its Place in the War Industries

By Walter George See,
Sales and Service Mgr.,
Submerged Combustion Co. of America,
Hammond, Indiana

ALTHOUGH Submerged Combustion for heating and agitating pickling solutions had been thoroughly tested and had successful applications in the field for several years at the time the first paper on this subject was read before the Wire Association in October 1939, Wire men and the Steel Industry generally were inclined to think of Submerged Combustion as a "new development."

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SINCE that time, Submerged Combustion has made a place for itself in the industry by the very simple method of living up to its claims of producing more pickled steel at a lower cost. Its list of users has increased materially; not only in the Wire Industry but in bars, plates, pipe, and ship-building fields. While the older installations are still plugging away faithfully . . . day in and day out . . . the newer ones are proving that the interesting cost and production figures made by early users were not isolated instances, but rather are indicative for the field as a whole.

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THE purpose of this paper on Submerged Combustion will be to present some of the facts and figures derived from actual installations during these years of hectic production. Several case studies from the older installations will be outlined, and figures on production, solution heating costs, and acid consumption with the burners will be compared with those formerly obtained with steam in the same plants.

✦ ✦ ✦

THE motion picture **"Mines Above Ground"** dramatizes the reclaiming of scrap and its importance in the war effort. The picture outlines the Bell System conservation program and shows the methods used by the Western Electric Company to reclaim and re-use scrap metals.

✦ ✦ ✦

Plant Inspection

IN connection with the paper presented Thursday morning on the "Electric Patenting of Wire" by John P. Zur, Metallurgical Engineer of the Trauwood Engineering Company, Cleveland, Ohio, a plant inspection of the process has been arranged for the same afternoon to enable those interested in the process to see it in actual operation. Arrangements for transportation may be made at the Wire Association Registration Desk at the Hotel Carter, during the Convention.

✦ ✦ ✦

Smoker

THE Smoker this year will be held on Wednesday evening, October 14th at the Hotel Carter under the able management of **Mr. A. R. Zapp,** Manager, Firthaloy Division, Firth-Sterling Steel Company, McKeesport, Pa. To those who have attended previous Smokers, this in itself is sufficient recommendation and the assurance that a "good time will be had by all".

✦ ✦ ✦

A. R. ZAPP
Manager, Firthaloy Division
Firth-Sterling Steel Company
McKeesport, Pa.
Chairman, Smoker-Dinner Committee

Luncheon

THE Annual Luncheon of the Wire Association will be held at the Hotel Carter on Tuesday, October 13th and the guest speakers will be Dr. Charles Copeland Smith of the National Association of Manufacturers, and representatives of the Army and Navy.

✦ ✦ ✦

Reservations

HOTEL reservations may be made by members of the Wire Association direct with the Hotel Carter, Cleveland, Ohio, **prior to September 28.** After that date no more reservations will be accepted for a specific hotel, but will be referred to the Central Housing Bureau of the American Society for Metals for allocation to such hotel as may have space available. **Watch out for this — Make your plans now to attend and send your reservation card in promptly.**

✦ ✦ ✦

Medal Award

THERE will be no Medal presented at this year's Convention but the Award for 1942 will be made at the Annual Director's Meeting in March 1943. The change in the date of award is due to the fact that it is desired by the Board making the Award that more time be given to study of the papers written during the year by the members of the Association and submitted for consideration for the Award.

✦ ✦ ✦

IT is felt that the Program Committee has done an excellent job this year, particular attention having been paid to the creation of a program designed to interest the operating and mill production men and it is hoped that the resulting attendance will be larger than ever before.

The Program Committee consists of:

A. M. Reeder, Metallurgical Engineer, Jones & Laughlin Steel Corp., Pittsburgh, Pa., Chairman.
Walter Farnsworth, Chief Metallurgist, Pittsburgh Steel Company, Monessen, Pa.
E. H. Thomas, Superintendent, Geo. W. Prentiss & Company, Holyoke, Mass.
H. H. Timbers, Contract License Manager, Western Electric Company, New York, N. Y.

(Please turn to Page 487)

❖ PROGRAM ❖

Wire Association Convention---1942

Cleveland, O., October 12-16, 1942. Association Headquarters — Hotel Carter

✦ ✦ ✦

The Exposition and Show of the National Metal Congress Will Be Open from Monday to Friday Inclusive, All Day and Every Evening During the Week Except Thursday Evening.

✦ ✦ ✦

Wire Association Headquarters at The Hotel Carter Will Be Open From 9:00 A. M. to 11:00 P. M. During the Entire Convention—Come and Get Acquainted!

✦ ✦ ✦

THERE WILL BE A REGISTRATION FEE OF $5.00 FOR THOSE ATTENDING THESE TECHNICAL SESSIONS AND INFORMAL MEETINGS

✦ ✦ ✦ ADMISSION WILL BE BY BADGE ONLY ✦ ✦ ✦

Open Discussions Will Be Held On the Papers Presented and These Discussions Will Be Published in the January, 1943, Issue of Wire and Wire Products.

PROGRAM COMMITTEE

Chairman

A. M. Reeder, Metallurgical Engineer,
Jones & Laughlin Steel Corp., Pittsburgh, Pa.

Walter Farnsworth, Chief Metallurgist
Pittsburgh Steel Co., Monessen, Pa.

E. H. Thomas, Superintendent,
George W. Prentiss Co., Holyoke, Mass.

H. H. Timbers, Contract License Manager,
Western Electric Company, New York, N. Y.

A. E. Glen, Assistant to General Sales Manager,
Carboloy Company, Inc., Detroit, Mich.

W. H. Crawford, Resident Manager,
Reliance Spring Washer Div.,
Eaton Manufacturing Co., Massillon, Ohio

Richard E. Brown, Editor and Publisher,
WIRE & WIRE PRODUCTS, Stamford, Conn.

ANNUAL DINNER—STAG SMOKER
A. R. ZAPP,
Manager, Firthaloy Division,
Firth-Sterling Steel Company,
McKeesport, Pa.
CHAIRMAN OF COMMITTEE

MEETING ROOMS
EDMUND D. SICKELS,
Advertising Manager,
"Wire & Wire Products,"
Stamford, Conn.
CHAIRMAN OF COMMITTEE

The Technical Sessions End Thursday in Order that Friday May Be Available To Make A Thorough Inspection of the National Metal Exposition.

MONDAY, OCTOBER 12

10:30 A. M.
DIRECTORS' MEETING

12 NOON
PROGRAM COMMITTEE LUNCH

Registration and Information. (Mezzanine of Hotel Carter) — October 12-16 — in charge of Mrs. R. S. Spengel, Secy.-Treas., WIRE & WIRE PRODUCTS.

— The Technical Sessions —

ALL RESEARCH PAPERS ARE PREPRINTED IN THE OCTOBER ISSUE OF WIRE AND WIRE PRODUCTS

The Discussions and the Mordica Memorial Lecture Will Be Printed in the January, 1943 Issue of Wire and Wire Products

MONDAY, OCTOBER 12 Afternoon Session — 2:30 P. M.	H. H. Timbers, Contract License Manager Chairman of Meeting	Western Electric Company, New York, N. Y.
OPENING ADDRESS	Carl E. Johnson	President of the Wire Association
PAPER: "The Wire Industry's Part in Industrial Conservation"	Ivon B. Tilyou, Assistant Utility Co-Ordinator	Industrial Salvage Section War Production Board, Washington, D. C.
SOUND MOTION PICTURE: "Mines Above Ground"		Western Electric Company, New York, N. Y.
PAPER: "Substitute Materials"		Bell Telephone Laboratories New York, N. Y.

TUESDAY, OCTOBER 13 Morning Session — 9:30 A. M.	Earle H. Thomas, Superintendent Chairman of Meeting	George W. Prentiss Company, Holyoke, Mass.
PAPER: "Reducing Accidents in Wire and Wire Products Operations"	R. H. Ferguson, Manager of Safety	Republic Steel Corp., Cleveland, Ohio
PAPER: "Scheduling and Planning the Wire Mill for War Production"	L. D. Seymour, Assistant Works Manager	Canada Works, Steel Company of Canada, Ltd., Hamilton, Ontario, Canada

TUESDAY, OCTOBER 13
1:00 P. M.

WIRE ASSOCIATION ANNUAL LUNCHEON — HOTEL CARTER

— GUEST SPEAKERS —

Representing the Army and Navy

and

Dr. Charles Copeland Smith,

National Association of Manufacturers, New York, N. Y.

(Members are at liberty to bring guests to hear these interesting speakers. Ladies are welcome and members and guests of other societies participating in the National Metal Congress are also invited to attend.)

TUESDAY, OCTOBER 13 4:00 P. M.	Wire Association Annual Meeting	Carl E. Johnson, President, The Wire Association Chairman

WEDNESDAY, OCTOBER 14 Morning Session — 9:45 A. M.	W. H. Crawford, Resident Manager Chairman of Meeting	Eaton Manufacturing Company, Massillon, Ohio
PAPER: "Tungsten Carbide Applications"	A. MacKenzie, Vice President Charge Manufacturing	Carboloy Company, Inc., Detroit, Michigan

THE MORDICA MEMORIAL LECTURE

To Be Presented By

Louis H. Winkler,
Metallurgical Engineer,
Bethlehem Steel Company,
Bethlehem, Pa.

"STEEL AND WIRE"

WEDNESDAY, OCTOBER 14 Afternoon Session — 2:00 P. M.	W. B. Farnsworth, Chief Metallurgist Chairman of Meeting	Pittsburgh Steel Company, Monessen, Pa.
PAPER: "Trouble Shooting on Bronze and Steel Weaving Wire"	L. D. Granger, Asst. to Vice President	Wickwire Spencer Steel Company, New York, N. Y.
PAPER: "Welding Electrodes"	Dr. John W. Miller, Metallurgist,	Reid-Avery Company, Dundalk, Baltimore, Maryland

WEDNESDAY, OCTOBER 14
Evening — 7:30 P. M.

ANNUAL DINNER — STAG SMOKER — THE HOTEL CARTER

THURSDAY, OCTOBER 15 Morning Session — 9:45 A. M.	A. E. Glen, Assistant General Mgr. of Sales Chairman of Meeting	Carboloy Company, Inc., Detroit, Michigan
PAPER: "Submerged Combustion Takes Its Place in the War Industries"	Walter G. See, Sales & Service Manager	Submerged Combustion Co. of America, Hammond, Indiana
PAPER: "Electric Patenting of Wire"	John P. Zur. Metallurgical Engineer	Trauwood Engineering Company, Cleveland, Ohio

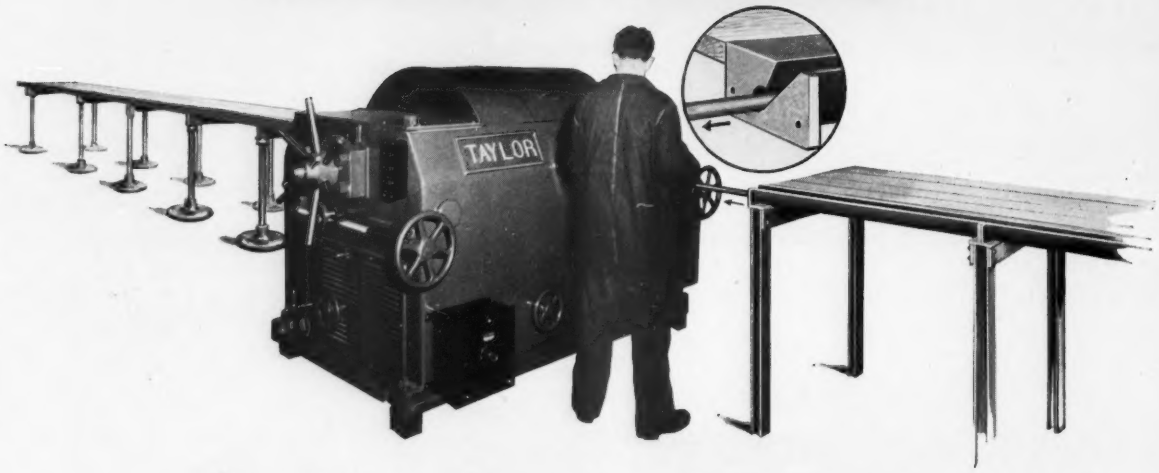
THURSDAY, OCTOBER 15
Afternoon Session — 1:30 P. M.

PLANT INSPECTION — ELECTRIC PATENTING OF WIRE

THURSDAY EVENING
OCTOBER 15 — 7:00 P. M.

AMERICAN SOCIETY FOR METALS DINNER
(Tickets for this dinner may be obtained at The Wire Association Registration Desk)

TAYLOR-WILSON



Machine for Straightening, Sizing, Burnishing

This machine, built for speed, accuracy and endurance, is playing an important part in industry's all-out war effort.

Production in straightening ranges up to 250 feet per minute on mild steel stocks. In all cases and on all metals speed of delivery is limited only by the capacity of the motor and the angle of the rolls.

Write for descriptive folder.

TAYLOR-WILSON MFG. CO.
17 Thomson Ave., McKees Rocks, Pa.
PITTSBURGH DISTRICT

Continuous Feed Dry Process For Removing Scale

A Description of the "DREI-BRITE" Process Developed by the Dreisbach Engineering Corporation, Yonkers, N. Y.

TODAY'S urgent need for new methods to improve quality and manufacturing processes is stimulating the development of ideas which are rapidly being made available to the country's plants for increasing production, perfection of quality and efficiency.

✦ ✦ ✦

THE removing of scale and oxide from hot rolled rods and strip has for years been a source of widespread interest and research. The Dreisbach Engineering Corporation, Yonkers, N. Y., with 32 years' experience in dry cleaning of metals, have introduced a continuous feed dry process for removing scale, light slivers and oxide.

✦ ✦ ✦

THE basic principle of this new method is in forcing a controlled supply of angular steel grit, at a very high velocity, through a long scouring chamber. The continuous feed of rods and strip through this chamber is subjected to the swirling action of the grit which thoroughly cleans all exposed surface in one pass. The grit is automatically returned to the hopper and mixing chamber and is used over and over. The scouring chamber is renewable by adding a new section at the front end, movable on rails to rear for full length service with each section. The strands are pulled through with a re-winding frame, having separate control for each reel to stop for butt welding, cutting and handling re-wound coil.

✦ ✦ ✦

THE principle operating cost items are labor and power. The total cleaning cost per ton compares very favorably with the old practice.

✦ ✦ ✦

THIS process continuous feed cleaning is dustless as all the dust is confined to the exhaust chamber at rear end of machine and is removed with exhaust suction through a pre-separator and dust filter. All usable grit which may be drawn off with the exhaust is automatically returned to machine.

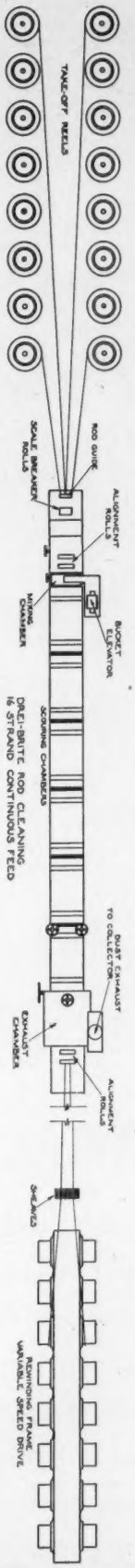
✦ ✦ ✦

THE above illustration showing the horizontal type machine is in production, cleaning special alloy steel rods which are used for War Production of rods and wire bomber motor springs. The high quality product made from rods cleaned with this dry process has proven the value and created a demand for this process. This machine is about fifty feet long and is equipped with cleaning chamber 7½" wide x 30' long with capacity varying from 16 strands of No. 5 to 9/32" rods to 8 strands intermediate sizes to ½". Design is adaptable for all size rods in any number of strands for tonnage production. A vertical type has been developed, adaptable for installation where floor space is not available.

✦ ✦ ✦

THE many intricate features involved in the design of this machine have been developed over a period of years during the building and operating of several installations of various types and sizes and this valuable experience is the only basis upon which new designs can be developed for applying the process to a wide range

(*Please turn to Page 466*)



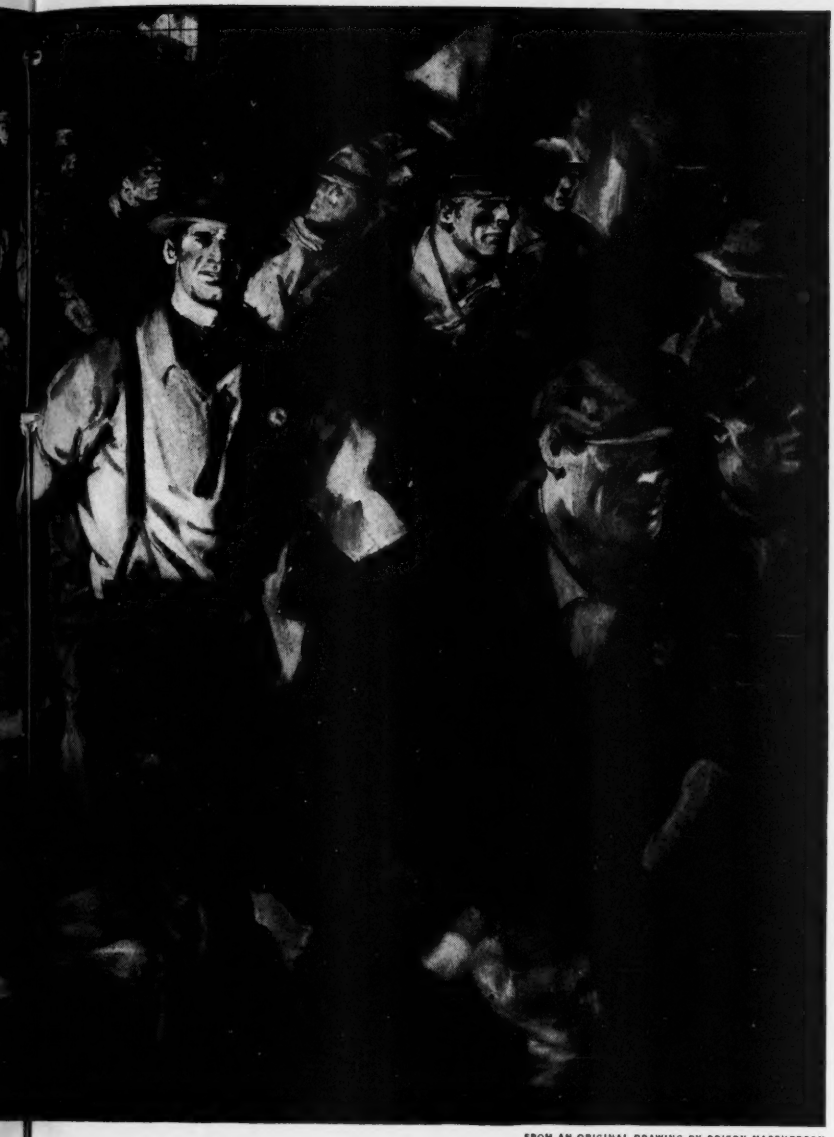
Flexing and dry scouring a continuous feed of rods or strip does not change the characteristics and tensile strength of original structure.

COPYRIGHT 1942 — JONES & LAUGHLIN STEEL CORPORATION

THROUGHOUT THE NIGHT DETERMINED

Like commandos on attack, stalwart steel men come in the dead of night to work till dawn, grim in their determination to produce speedily the fighting steels to arm your sons and brothers on the battle fronts. On the night-turn, thousands strong, come men like the metallurgist who added the final touch in perfecting a new armor steel; like the melter who now makes that steel two-hundred tons at a time.

There come men who roll wide steel plates for ships and miles of tubes for bombs and those who forge and machine glistening shells from steel made by their fellow workers. There are the coke workers, the blast furnace men, the melters, blowers, heaters, rollers, finishers—



FROM AN ORIGINAL DRAWING BY ORISON MACPHERSON

MEN MAKE BATTLE STEELS

workmen of many trades and skills—all doing their part to furnish steel for ships, tanks, guns, planes and other fighting equipment.

These men of steel, by their will-to-do to help win this war, achieve new high records in production night and day, month after month. Every ton of steel they make is shipped to war.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH, PENNSYLVANIA

PARTNER TO INDUSTRY IN WAR PRODUCTION

J&L STEEL

G. W's WEST POINT

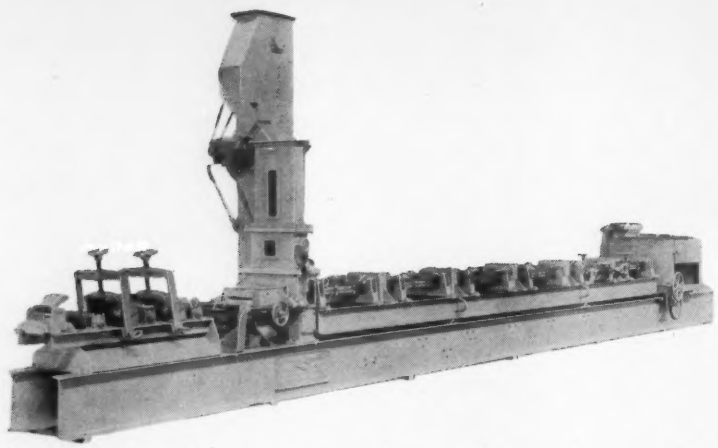
Geo. Washington started a World War and learned his military art between his 21st and 26th years, as an officer in four small military expeditions into the Upper Ohio Valley. The task was to oust the French and clear the way for a project of settling English farmers on wilderness lands which he and his Virginia associates of the Ohio Company had obtained by grant from George II.

Washington's first expedition (1753) was to warn French against encroachment on English-claimed territory. He was but 21 when he crossed the Appalachians in dead of winter, with guide, interpreters and pack train. His mission was to uncover just how strong had become French occupation of rich Ohio Valley (present Pittsburgh district). He reported back that French officers "told me it was their absolute design to take possession of the Ohio."

Washington came out again in 1754 in command of small force of militia to chase out French. He got into a fight with them and their Indians. Ensign de Jumonville, young French marine officer of noble descent was killed. Later Washington found himself besieged in temporary stockade (Fort Necessity, in mountains near Uniontown, Pa.). He surrendered July 4. His little force was disarmed, but marched out with drums beating. They straggled back to Virginia, harassed by Indians and pretty well battered up. "The strife that armed all the civilized world began here" (in America) wrote Parkman, and Hugh Walpole said, "It was the volley fired by a young Virginian in the backwoods of America that set the whole world on fire."

These small skirmishes in "the woods and bushes" of the New World (French and Indian War) spread to war in the Old (Seven Years War, 1756-63) during which England wrested from France all of India, of Canada, of America (to the Mississippi) and compelled recognition of British sea supremacy. Washington's next military trips westward were with expeditions related to this early world conflict. He was "guest" aide with ill-starred Braddock (1755) who rejected the young Colonial officer's advice on how to fight Indians. As colonel of a regiment of bucktails (Colonials) he served under victorious General John Forbes (1758).

Washington's last trip to Pittsburgh was made in his 53rd year (1784) to promote a canal connecting the Potomac and Ohio — begun, but never completed. He also looked after his 50,000 acre holdings in Western Pennsylvania, valued at close to half million dollars. Over these now waved the Stars and Stripes of the young Republic his military genius had fathered, and of which he was shortly to be First President. Western Pennsylvania was young George Washington's West Point that fitted him for his career as a soldier and leader of a nation.



Scouring Machine.

✦ ✦ ✦ ✦ ✦ ✦ ✦

of requirements. The complete unit includes air chamber, mixing chamber, scouring or cleaning chamber, abrasive separating and exhaust chamber, conveyors to automatically return the abrasive to hopper, valves to control abrasive feed and compressed air to nozzle.

✦ ✦ ✦

THE process is universal for cleaning all grades of rod and strip ranging from low to high carbon and special alloy steel, copper and non-ferrous alloys. The re-winding frame is provided with a variable speed drive to control the feed according to requirements.

✦ ✦ ✦

THE strand method of cleaning has a distinct advantage as each strand is exposed after being cleaned for visual inspection to detect any and all flaws in the material and eliminating further processing costs. The essence of this process is the high quality product. Additional advantages will accrue from operating of the "DREI-BRITE" process; such as, safety, no effect on plant and equipment, no corrosive elements or dust conditions which are harmful to employees and stock, a clean sanitary process.

I NEVER MISS ONE!
I'LL GET SOME NEW IDEAS!
AND SWELL ENTERTAINMENT!
PUTS NEW LIFE IN YER!
AND BIG EATS!
GREAT CHANCE TO SWAP IDEAS
TO THE CONVENTION

Are You Coming To Cleveland, O. October 12-16, 1942?

To Attend
The War Production Convention
of the
Wire Association

CONVENTION HEADQUARTERS WILL BE AT THE HOTEL CARTER

EVERY wire production executive engaged in the manufacture or fabrication of wire and wire products of any kind is invited to attend these meetings.

THERE WILL BE A REGISTRATION FEE OF $5.00

MAKE YOUR PLANS NOW TO ATTEND:—

For Detailed Information on Program, Membership, Hotel Reservations and Transportation.

Address RICHARD E. BROWN, Executive Secretary,

300 MAIN STREET **STAMFORD, CONN.**

✦ GOVERNMENT WIRE PRODUCTION INFORMATION ✦

Use of Steel Wire Curtailed for Printers and Publishers

SHARP reduction in use of wire by the printing and publishing industry has become necessary, the Printing and Publishing Branch of the War Production Board, warned recently in advising publishers and printers to curtail usage for stitching and shipping purposes.

✦ ✦ ✦

THE industry is vitally affected by limitation orders on steel, blackplate and wire products. Four thousand tons of steel wire were used by newspaper and periodical publishers to tie bundles for shipping, and two thousand five hundred tons of stitching wire were used during the last year. This total must be drastically cut because of an acute wire shortage precipitated by the war effort.

Simplified Practice Recommendation R147-42, Wire Diameters for Mineral Aggregate Production Screens, Now In Print

PRINTED copies of Simplified Practice Recommendation R147-42, Wire Diameters for Mineral Aggregate Production Screens, are now available, according to an announcement of the Division of Simplified Practice, National Bureau of Standards.

✦ ✦ ✦

THIS recommendation lists the wire sizes recommended for the construction of mineral aggregate production screens of various sizes of clear square opening. The original recommendation, drafted by a general conference of all interests in 1932, reduced the variety of wire diameters for openings ranging from 1/8 to 3 inches by approximately 75 percent of their former number. The recommendation was reaffirmed in 1936, and again in 1940. As a result of recent review of the recommendation, wire diameters for screens with clear square openings of 3½ and 4 inches, were added to the schedule. This adds only one new wire diameter, i. e., one inch, to those already listed.

✦ ✦ ✦

COPIES of R147-42 may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents each. A discount of 25 percent on orders of 100 or more copies is available to those desiring to purchase a supply of this publication for business purposes.

✦ ✦ ✦

Mattress Production Banned

PRODUCTION of mattresses must stop on September 1, and of studio couches, sofa beds, and

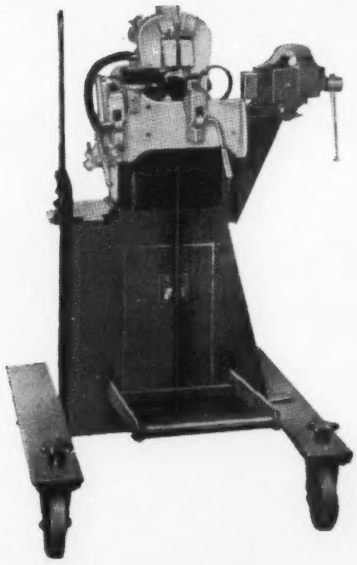
(*Please turn to Page 468*)

MICROMETER PRECISION MICRO-WELD TRADE MARK REG. U. S. PAT. OFF.

CONTINUOUS IMPROVEMENT

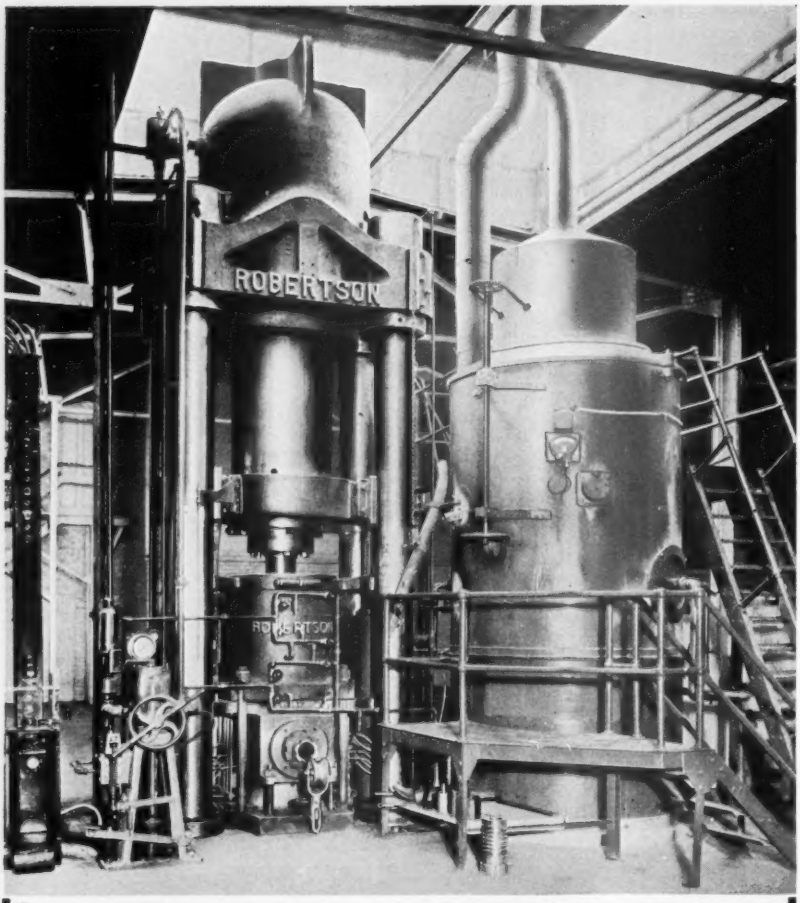
MICRO-WELDERS with dial indicating annealing attachments are now available for high carbon wire.

There is positive control of annealing temperature and already hundreds of these special MICRO-WELDERS are proving their dependability and satisfactory performance with leading manufacturers.



MICRO PRODUCTS COMPANY
20 NORTH WACKER DRIVE, CHICAGO, ILL.
Telephone, State 7468

At Paranite



A sound investment!

Here is the Robertson Installation that has been at work for some time at Paranite Wire & Cable Co., Division of Essex Wire Corporation, Marion, Ohio.

Installation includes: A 2,100-ton Robertson Lead Cable Encasing Press, and a 16,000 lbs. holding capacity Robertson Lead Melting Kettle—with auxiliary equipment. The pump (not shown) is a Robertson No. 70 Triplex Plunger Hydraulic Pump, with a capacity of 18 gallons per minute, driven by a 75 h.p. motor.

Robertson Equipment is also used by Roebling, Goodyear, General Cable, General Electric, Western Electric, U. S. Rubber, Anaconda, Goodrich, Swan, Boston, Northern Electric and other leaders of Industry. Choose Robertson Equipment and you have the utmost that money will buy.

Operating and performance data mailed on request.

John Robertson Co. Inc.

125-137 WATER STREET BROOKLYN, N. Y.

Designers and Builders of

All types of lead encasing machinery for rubber hose and electrical cable manufacturers, including Extrusion Presses, Hydraulic Pumps, Melting Furnaces and Pots, Dies and Cores, Hydro-pneumatic Accumulators and Lead Sheath Stripping Machines.

Government Wire Production Information

(*Continued from Page 467*)

lounges on November 1, if such products contain iron or steel, under terms of an order issued recently.

✦ ✦ ✦

THESE limitations are incorporated in a complete revision of Order L-49 (Beds, Springs, and Mattresses) which also establishes quotas for the production of bed springs, and sets up regulations governing the renovation of mattresses, springs, lounges, and other products.

✦ ✦ ✦

THE provisions applying to each class of bedding products covered by the order are summarized below:

✦ ✦ ✦

Mattresses, Pads and Pillows

FURTHER processing of iron or steel for use in innerspring construction for these products is banned as of August 1. During the current month, a manufacturer of mattresses, pads, and pillows may use 100 per cent of his average monthly consumption of iron and steel during the year ended June 30, 1941, provided that it has already been processed or fabricated.

✦ ✦ ✦

TWO exceptions to the provision ending production of mattresses, pads, and pillows containing iron or steel on September 1 are listed by the order:

1. Inventories of buttons, ventilators, handles, and eyelets may be used.

2. Manufacturers who sell mattresses, etc., on a "guarantee" basis may replace units contained in mattresses, etc., previously sold.

✦ ✦ ✦

Buttons, Eyelets, Etc.

ACQUISITION of iron or steel for use in these products is prohibited as of August 1, except from the inventories of other manufacturers. Use of any iron or steel in their manufacture is prohibited, effective September 1.

✦ ✦ ✦

Bed Springs

DURING August and September, manufacturers of coil, flat, and fabric springs are limited to a monthly quota of 25 per cent of the average monthly consump-

tion of wire used in the production of these products in the year ending June 30, 1942. The quota for box bed springs is set at 50 per cent.

✦ ✦ ✦

BEGINNING October 1, the quotas are established on a quarterly basis. For the coil, flat, and fabric springs, manufacturers are limited each quarter to 6¼ per cent of the wire used during the base year. For the box bed springs, the quota is 12½ per cent quarterly.

✦ ✦ ✦

FURNITURE Branch officials pointed out that the production for frames for bed springs, except for certain hospital types, is prohibited by Conservation Order M-126. In calculating the use of iron and steel during the base period, manufacturers may include the material used in the production of frames.

✦ ✦ ✦

HOWEVER, the iron and steel used under the quota limitations may be used only as wire, and not in the frames.

✦ ✦ ✦

AN additional regulation on bed spring manufacture specifies maximum weights of iron and steel, except for joining hardware, which may be used for different types. This restriction becomes effective September 1.

✦ ✦ ✦

PRODUCTION of bedding products for the Army, Navy, Maritime Commission, War Shipping Administration and other Government agencies, and production for Lend-Lease purposes, for hospitals and sanitariums is exempted from the restrictions of the order.

✦ ✦ ✦

APPEALS from the provisions of the order must be made on Form Pd-500 and filed with the field office of the War Production Board for the district in which the manufacturer's plant is located.

✦ ✦ ✦

Tin Content of Solder

BY an amendment to Conservation Order M-43-a, production and use of wiping solder having a tin content of up to 38% may be

(*Please turn to Page 470*)

KEYSTONE Wire

Compared with all the ruggedness, determination and efficient weapons that make a fighting U. S. Marine, wire may seem like a very minor point. But suppose a Marine, landing on a far-away enemy shore, found his field equipment and armament suddenly stripped of every item made of wire. He'd be minus bullet cores . . . many vital rivets, bolts and washers . . . gas mask clips . . . shoe nails . . . ammunition and food carton binding wire and strapping . . . and dozens of other equally essential items. Thus does WIRE, too, play a basic role in all America's fighting services. And "fighting" wire comes first—at Keystone as well as the other leading wire mills that are "drafted for the duration".

KEYSTONE

STEEL & WIRE CO. PEORIA, ILLINOIS

HIGH CARBON OR LOW CARBON

SAMSON SPRING WIRE

Bright-Tinned Coppered Annealed Galvanized

Government Wire Production Information

(*Continued from Page 469*)

continued until September 1 for all purposes, and until January 1 for use by public utilities in the installation and repair of lead water service pipe.

✦ ✦ ✦

THE amendment, modifies the terms of the original order, which stipulated that wiping solder having a tin content of more than 30% might not be used or manufactured after June 30.

Certificates Must Accompany Copper Purchases

COPPER Order M-9-b was amended by the Director General for Operations to require proof from foundries and ingot makers that they are entitled to receive delivery of refined copper, alloy ingots or copper scrap.

✦ ✦ ✦

THE amendments provide that foundries and ingot makers authorized to receive deliveries of refined copper must surrender their allocation certificates to dealers at the time orders are placed. If an order is placed with a refiner, the refiner must endorse the certificate specifying the amount of refined copper he will deliver.

✦ ✦ ✦

IF the customer is purchasing copper alloy ingot, copper scrap or copper alloy scrap, he must attach a certification to his purchase order giving the number of his allocation certificate.

✦ ✦ ✦

Copper Under Complete Allocation

CHANGES in the copper control orders, M-9-a and M-9-b, were announced recently by the Director General for Operations.

✦ ✦ ✦

M-9-a as amended places all deliveries of copper under complete allocation by the Director General. Brass mills and wire mills are subject to the same restriction. Dealers supplying brass mill and wire mill products to the industry may make delivery only when the order bears the appropriate allocation classification and purchaser's symbol and bears a preference rating of A-1-k or higher.

✦ ✦ ✦

THE control of allocation of copper to foundries and ingot makers is transferred from M-9-a to M-9-b and some procedural changes are made. No new forms are called for by either order.

✦ ✦ ✦

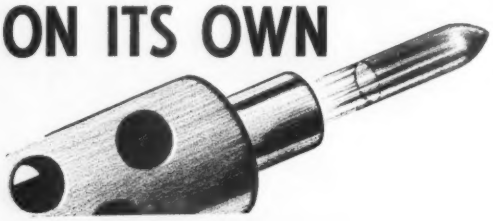
Steel Cartridge Cases

AS soon as industrial processes can be changed, steel will be substituted for brass in the manufacture of cartridge cases for artillery shells. Experiments are also going forward working to similar conclusions in the small arms ammunition, as ordnance experts report that the new steel cases are as satisfactory as those made from brass.

✦ ✦ ✦

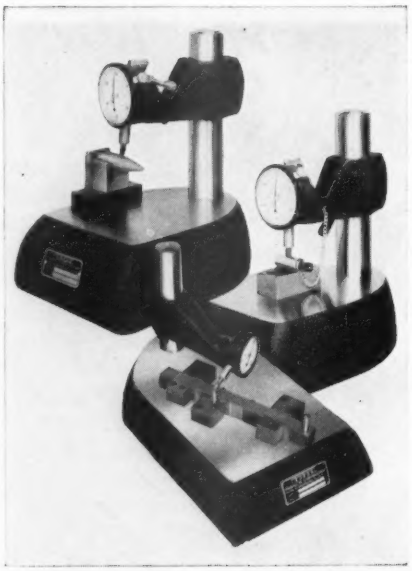
IT is estimated that the conversion of small arms ammunition from brass to steel cases would save 11,000 tons of copper alone in 1942 and 1943. Over 30 manufacturers are now making the new steel cartridge cases.

AFTER A BULLET LEAVES A GUN IT IS ON ITS OWN



But, if inspected with a Federal Dial Indicator Gage it has a better chance of reaching the mark.

A bullet that is out-of-round has a slim chance of hitting the target. The gages illustrated at the right are designed to ensure accurate bullet production. Diameter and concentricity of the different parts of the bullet are easily and quickly inspected. The illustrations shown are standard type gages, low in cost and of proved efficiency. For further details write —



FEDERAL PRODUCTS CORP.
PROVIDENCE RHODE ISLAND

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PRECISION MEASURING INSTRUMENTS

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Molybdenum

MOLYBDENUM may be melted only after approval of melting schedules as provided in Order M-21-a or by specific authorization, the Director General for Operations ruled in a revision of Order M-110.

✦ ✦ ✦

THE action places molybdenum under the same restrictions as vanadium, since both are used almost entirely in the manufacture of alloy steel and largely by the same users.

✦ ✦ ✦

THE order is extended until revoked by the Director General for Operations.

✦ ✦ ✦

Hair Pins

THE manufacture of hairpins and bobpins may be continued to September 15 at the same rate as has been in effect since April 25, under Amendment No. 1 to Order L-104. That rate is 50 percent of the rate of production of hairpins and bobpins, respectively, in 1941.

Curb Extended on Production of Safety Razors, Blades

EXISTING limitations on the production of safety razors and razor blades are continued in effect from August 1 to September 30 by Amendment No. 2 to General Limitation Order L-72, issued August 4 by the Director General for Operations.

✦ ✦ ✦

THE amendment provides for production of safety razors at 70 percent of each manufacturer's average rate of production in 1940, and of blades at 100 percent of the 1940 rate.

✦ ✦ ✦

Lead Bullet Rod Under Ceiling

ISSUANCE of Maximum Price Regulation No. 199, covering lead bullet rod, was announced August 10 by Price Administrator Henderson. The regulation became effective August 13.

✦ ✦ ✦

LEAD bullet rod is the raw material from which is made the lead slug that forms the core of a rifle or machine-gun bullet.

REGULATION No. 199 was drawn to provide the war program with a uniform price for rod.

✦ ✦ ✦

Mechanical Bookbinding Wire Stocks May Be Used

USERS of mechanical bookbinding wire are free to liquidate inventories of already processed and formed wire, George A. Renard, chief of the printing and publishing branch explained August 3.

✦ ✦ ✦

THE steel conservation order, M-126, Mr. Renard pointed out, prohibits fabrication or assembly of mechanical book-binding wire but does not interfere with use of inventories of already processed and formed wire.

✦ ✦ ✦

IN the case of wire on coils, reels or spools which has not been fabricated, inventories are frozen under the terms of the steel order.

✦ ✦ ✦

IN order to avoid misunderstanding, Mr. Renard explained that the inventories which may be liquidated include bookbinding

(*Please turn to Page 485*)

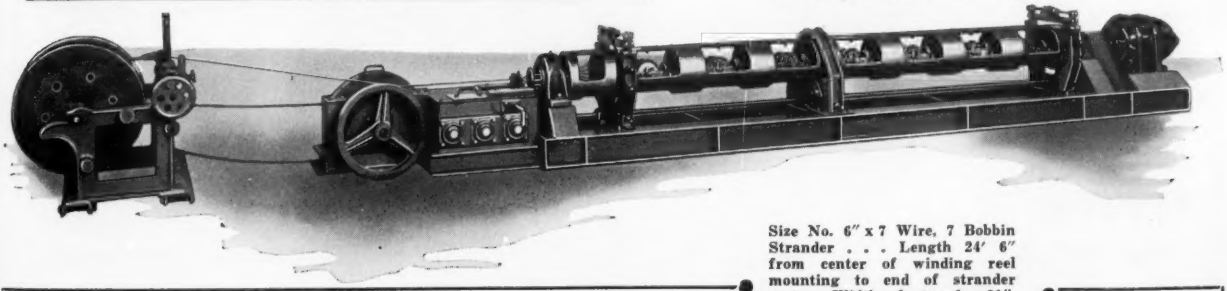
ROBINSON TUBE-TYPE **WIRE STRANDERS**

Dynamically Balanced! No Vibration!

IN this new Robinson Tube-Type Wire Strander are embodied the suggestions of engineers and operators of numerous wire cable plants throughout the country. As a result of careful study and field contact, this machine now meets the most exacting requirements of the industry. Frame, main and take-off bearing mounts, gear housing and base are of all-welded construction—as structurally stable as though cast in a single unit. Steel tube of high tensile strength is statically and dynamically balanced. Gear box is designed to produce any lay within the range of lays required for its size and type. All high-speed gears are fully enclosed; they operate in a continuous oil bath. Supporting rollers of the best quality highly compressed fibrous material are mounted on spindles running in adjustable ball bearings. Bobbin latches and bobbin brakes are of new design and semi-automatic in operation.

Full information available upon inquiry. Your priority rating may permit of immediate consideration.

Write for Illustrated Manual



Size No. 6″ x 7 Wire, 7 Bobbin Strander . . . Length 24′ 6″ from center of winding reel mounting to end of strander motor. Width of strander 31″. Approximate gross weight for domestic shipment 3,000 lbs. Reel stand shipping wgt. 450 lbs.

ROBINSON MANUFACTURING COMPANY
WORKS — MUNCY, PENNA.
Sales & Executive Offices — **30 CHURCH STREET . . . NEW YORK, N. Y.**

UNIQUE

Outstanding Personalities of the Wire Industry

J. K. Beeson, Captain Air Corps, U. S. Army, Craig Field, Selma, Ala.

J. K. BEESON, Sales Vice President of Pittsburgh Steel Company, recently relinquished his civil duties to join the Army Air Corps with the commission of Captain. Mr. Beeson has been associated with Pittsburgh Steel Company for the past twelve years in both operating and sales capacities and is a Past-President of the Wire Association.

✦ ✦ ✦

Robert W. Sandelin, 2nd Lieut., Ordnance Department, U. S. Army, Birmingham, Alabama

DR. ROBERT W. SANDELIN, Metallurgist of the Atlantic Steel Company, Atlanta, Georgia, is now with the Birmingham Ordnance District for the duration of the war as a Second Lieutenant in the Ordnance Department. Dr. Sandelin is on leave of absence from the Atlantic Steel Company and will return to their employ upon his retirement from service in the Army.

✦ ✦ ✦

J. K. BEESON,
Captain, Air Corps, U. S. Army

Earl C. Smith, Member of the American Steel Mission to Great Britain

EARL C. SMITH, Chief Metallurgist of the Republic Steel Corporation, Cleveland, Ohio, has been appointed a member of the American Steel Mission to Great Britain.

✦ ✦ ✦

THE purpose of the mission is to study British methods and requirements and to investigate means of increasing the quantity of steel needed for the United Nations war effort and to obtain maximum efficiency in the use and allocation of the combined productive capacity of the two countries.

✦ ✦ ✦

Lieut. Commander H. K. Clark Army and Navy Munitions Board

H. K. CLARK, vice president and general manager of Norton Company, who recently re-

THE WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON, NEW JERSEY, U. S. A.

ELECTRICAL WIRE AND CABLE AND WIRE ROPE MACHINERY

Stranders
Bunchers
Cablers
Closers
Armor. Machines
Tapers
Juters
Serving Heads
Compound Tanks
Saturating Tanks
Powderers and Chalkers
Capstan Sections

Let-offs
Gang-Spoolers
Re-winders
Capstan Takeups
Continuous Takeups
Heavy-Duty Takeups
Traverses
Measuring Mach's.
Testing Mach's.
Vulcanizers
Polishers
Reel Crutches

MEAS. MACH'S. TRAVERSES, REEL CRUTCHES, BUNCHERS, SMALL POWDERERS, ETC. — USUALLY CARRIED IN STOCK

LITERATURE AVAILABLE ON ALL LISTED UNITS

turned to Worcester after nine months' service as a Dollar-a-Year man in the OPM and WPB, lastly as Assistant Deputy Director of the Division of Industry Operations, is back in the Capitol. This time he has been "drafted" by the Navy and with the rank of Lieutenant Commander is a member of the Army and Navy Munitions Board.

✦ ✦ ✦

Universal Power Corp. Distributor for Krembs & Company

KREMBS & CO., Chicago, has appointed **Universal Power Corporation** of Cleveland, Ohio, as its stocking distributor of Fluxine Fluxes and Kop-R-Arc welding rods and other Krembs Welding products in the Cleveland Trade Area, embracing all of Northern Ohio according to **A. Leslie Pfiel, President** of the **Universal Power Corporation.** Mr. Pfiel states that his company is making arrangements for dealers throughout the area to be serviced from Cleveland stocks.

N. F. Melville, Asst. Mgr. of Sales, Steel and Wire Products, Pittsburgh Steel Company

N. F. MELVILLE has been appointed Assistant Manager of Sales, Steel and Wire Products for Pitstburgh Steel Co., Pittsburgh,

N. F. MELVILLE

Pa. Mr. Melville has been associated with Pittsburgh Steel Co. in various sales capacities for the past fifteen years.

HIS recent duties have been directing the sales of Munitions and of Manufacturers Wire, which duties he will continue to absorb as well as the larger responsibilities indicated by his current appointment.

✦ ✦ ✦

Pittsburgh Steel Company Sales Department Changes

JOS. A. VOELKER, formerly District Sales Manager for Pittsburgh Steel Company at New York, N. Y., has been appointed General Manager of Sales and is stationed at Pittsburgh. **W. F. Boore** who has been connected with the Company's New York office for several years has been made Acting District Sales Manager for that office.

✦ ✦ ✦

L. A. VER BRYCK, who has been District Sales Manager for Pittsburgh Steel Company at Pittsburgh, Pa., has been made Washington (D. C.) Sales Representative. **Jos. G. Smith** has been made Acting District Sales Manager of the Company's Pittsburgh

(*Please turn to Page 479*)

THE WIRE ASSOCIATION

WHAT IT GIVES YOU FOR $10.00 ANNUAL DUES

1. WIRE & WIRE PRODUCTS—For One Year.
   The official publication of The Wire Association covering the Wire Industry; its Metallurgy, Technology, Research, Processes, Machinery and Personnel.
2. THE ANNUAL BUYERS GUIDE & YEAR BOOK OF THE WIRE ASSOCIATION.
   The Year Book Section contains: Constitution and By-Laws of The Wire Association; Details of year's meetings, etc.; List of Members, Index to Papers and Articles in WIRE & WIRE PRODUCTS.
3. QUESTION AND ANSWER SERVICE.
   Answers to technical and operating problems direct by mail. Available to members only.
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   Attendance at the regional meetings which include Local Plant Inspections, Technical Sessions and Discussions.
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   Both at Annual and Regional Meetings, and throughout the year, for interchange of helpful information.
7. INFORMATION SERVICE ON MACHINERY, EQUIPMENT AND SUPPLIES.
   The Technical, Catalogue and Correspondence Files of the Wire Association hold the answer to practically every "Where can I buy" problem. This service is available to members without charge.

For Detailed Information Address

RICHARD E. BROWN—Executive Secretary

300 Main Street, Stamford, Conn.

A Review of Recent Wire Patents

No. 2,288,695, ELECTRICAL INSULATED CONDUCTOR, patented July 7, 1942 by Calvin S. Fuller, Chatham, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York.

The wire conductor is covered with a layer of insulation comprising a fibrous reaction product of cellulose and a water-soluble resin-forming compound containing a methylol radical, made by partially reacting fibrous cellulose material, by impregnation and heating, with an aqueous solution of a water-soluble resin-forming compound containing a methylol radical so that the identity of the fibers of the original cellulose material is retained and the fibrous reaction product is a cellulose derivative which is predominately cellulosic in nature, but which has flame resistance, abrasion resistance, moisture resistanee, light resistance, and power factor characteristics superior to those of the original cellulose material, and electrical resistivities at high and low humidities superior to those of the original cellulosic material and approximating those of silk.

✦ ✦ ✦

No. 2,288,988, APPARATUS FOR CUTTING CABLES AND OTHER LONG ARTICLES, patented July 7, 1942 by William H. Blount, Worcester, and Clayton F. Fisher, Spencer, Mass., assignors to Sleeper & Hartley, Incorporated, Worcester, Mass., a corporation of Massachusetts.

Complete Descriptions and Drawings of Patents May Be Had for 25 cents. Address, Wire & Wire Products, 300 Main St., Stamford, Conn.

A cable cutting machine is provided comprising a drum for drawing cable from a source of supply, a flying carriage located between the drum and the source of cable supply for movement longitudinally with the moving cable, a cutter on the carriage which is movable transversely to cut the cable. The carriage is temporarily connected to the cable so that it will be drawn forward by the cable movement.

✦ ✦ ✦

No. 2,289,253, STRAND TWISTING DEVICE, patented July 7, 1942 by Archie J. Dowd, Plainfield, N. J., assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York.

This device is adapted to intertwist wire strands, and the invention lies in the strand grasping jaws and actuation thereof.

✦ ✦ ✦

No. 2,289,561, SCREW, patented July 14, 1942 by Maxwell A. West, Portland, Oreg., assignor, by direct and mesne assignments, to Champion, Inc., Portland, Oreg., a corporation of Oregon.

A number of flat-bottomed slots are provided across the screw head, with a cavity where the slots intersect.

✦ ✦ ✦

No. 2,290,176, WIRE DRAWING, patented July 21, 1942 by John C. Garand, Springfield, Mass.

It is claimed that this die will not tear stock, particularly of tough material, such as stainless steel which tends to stick to dies.

✦ ✦ ✦

No. 2,290,698, ELECTRIC POWER CABLE, patented July 21, 1942 by Johannes Sorensen Mollerhoj, Charlottenlund, near Copenhagen, Denmark.

Metal tape is disposed on the broad sides of flattened cables in order to support the broad sides of the dielectric sheath.

✦ ✦ ✦

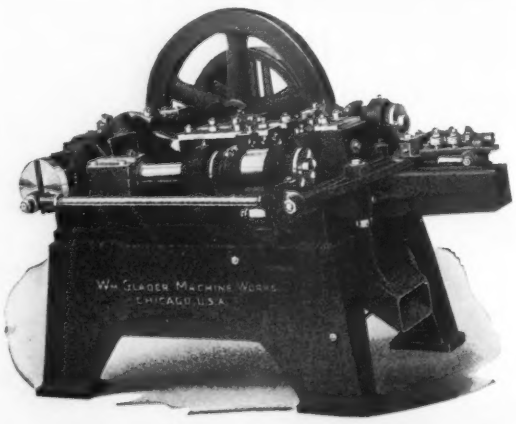
No. 2,291,004, SPRING STRUCTURE, patented July 28, 1942 by Theodore D. Stewart and William A. Clark, Detroit, Mich., assignors to L. A. Young Spring and Wire Corporation, Detroit, Mich., a corporation of Michigan.

Bowed wire compression springs are employed, with the reaches between the loops rigidly secured together.

✦ ✦ ✦

No. 2,291,344, APPARATUS FOR MANUFACTURING INSULATED WIRE, patented July 28, 1942 by Samuel T. Powell, Fairfield, Conn., assignor

HIGH SPEED WIRE NAIL MACHINE



WM. GLADER MACHINE WORKS

210 N. Racine Ave. Chicago, Illinois

Glader Machines on large head, single-blow roofing nails can be seen in operation at any of the independent wire mills in the United States.

The production figures on common nails shown below, are guaranteed.

SIZE MACH.	SIZE WIRE	MAX. LENGTH OF WIRE	NUMBER OF NAILS PER MIN.	CAP. IN POUNDS PER HR.
#00A	#16	1⅛"	700	37.2
#00	#14	1¼"	550	55
#0	#12	1¾"	450	89
#1	#10	2½"	400	192
#2	#8	3½"	325	310
#3	#4	5"	225	523
#4	#1	7"	190	622
#4s	5/16"	9"	175	1155
#5	⅜"	12"	160	2400

This high output and economical operation account for the GLADER machine being accepted as standard equipment in all recent installations.

to General Electric Company, a corporation of New York.

More specifically, the invention relates to an apparatus for applying rubber to wire, which wire is then conducted through a vulcanizing chamber.

✦ ✦ ✦

No. 2,291,389, SILENCER FOR SPRING STRUCTURES, patented July 28, 1942 by Abraham Krakauer, Brooklyn, N. Y., assignor to Kay Manufacturing Corporation, Brooklyn, N. Y., a corporation of New York.

Fabric strips, employed in the structure, are held in place by the tie wire assembly.

✦ ✦ ✦

No. 2,291,390, SPRING MATTRESS STRUCTURE, patented July 28, 1942 by Abraham Krakauer, Brooklyn, N. Y., assignor to Kay Manufacturing Corporation, Brooklyn, N. Y., a corporation of New York.

Helical wire springs extend around the border wires and tie the outer wire coils in place. Similar helical springs extend between rows of the wire coils and tie these together.

✦ ✦ ✦

No. 2,291,429, CUSHION CONSTRUCTION, patented July 28, 1942 by Harold F. Wolfe, Detroit, Mich., assignor to The Murray Corporation of America, Detroit, Mich., a corporation of Delaware.

Included in this construction are horizontallyextending sinuous wire springs, and vertically-extending border coil springs.

No. 2,291,549, APPARATUS FOR WIRE GLASS MANUFACTURE, patented July 28, 1942 by Paul Frank Gutmann, St. Louis, Mo., assignor to Mississippi Glass Company, St. Louis, Mo., a corporation of New York.

As the molten glass flows over a pass-forming roll and into the pass between it and a second roll, wire mesh is fed into this pass.

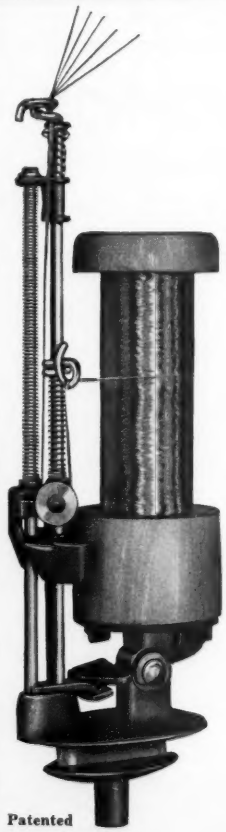
✦ ✦ ✦

Steel Recovery Corporation Organized

ORGANIZATION of the Steel Recovery Corporation has been announced by the War Production Board. The new corporation, acting as agent of the Metals Reserve Company, will make arrangements for the purchase and sale to war contractors of idle, frozen and excess stocks of iron and steel, as part of WPB's nationwide program to direct all scarce materials into strategic production as rapidly as possible. It will function in much the same manner as the Copper Recovery Corporation, which is now in the process of channeling millions of pounds of copper into war use.

AT the first meeting of the board of directors, held in Washington, George L. Stewart, vice president of Edgar T. Wards' Sons Company, steel distributors, of Pittsburgh, Pa., was elected president of the Steel Recovery Corporation. Other members of the board are: C. W. Nichols, vice president, Metals Reserve Company; John May, vice president, American Steel and Wire Company, Cleveland, Ohio; N. J. Clarke, vice president, Republic Steel Corporation, Cleveland, Ohio; B. E. Kibbee, vice president, Sharon Steel Corporation, Sharon, Pa.; Richmond Lewis, president, Charles C. Lewis Company, Springfield, Mass.; Everett D. Graff, president, Joseph T. Ryerson & Son, Inc., Chicago, Ill.; Lester Brion, president, Peter A. Frasse and Company, Inc., New York, N. Y.; Walter S. Tower, president, American Iron and Steel Institute, New York, N. Y.; Walter S. Doxsey, president,

(*Please turn to Page 480*)



Patented
2 BX - Special
MOSSPEED Carrier.

MOSSPEED BRAIDER CARRIERS
FOR BRAIDING
MULTIPLE ENDS OF FINE WIRES

A special design MOSSPEED CARRIER and BOBBIN is supplied for braiding "SHIELDED" WIRE & ETC.

Will braid multiple ends of fine aluminum, brass, bronze or copper wire, Etc.

SHEAVE-WHEEL on braider-stop and SPECIAL-THREADEYES on carrier, together with new type BOBBIN provides an even wire "let-off" resulting in a high quality and uniform braided shield.

Consult our engineers regarding your braiding problems.

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European Agent

James Day (Machinery), Ltd., The Grange, Whetstone, Nr. Leicester, England
Ross Whitehead & Co., Ltd., Montreal and Toronto, Canada.

Modern Wire Enameling Equipment

(*Continued from Page 450*)

Fume Exhaust System

THE fume exhaust system consists not only of an exhaust hood, which sucks the fumes from the top of the enameling oven, but also entails equipment for the proper ventilation of the enameling room itself and the elimination of obnoxious fumes leaving the stacks on the outside of the building.

✦ ✦ ✦

THE exhaust hood is a very important part of the equipment. It should be designed to allow for the proper amount of up-draft in the oven, which should be controllable for the various wire ranges. Also, since enameling fumes drop out their condensibles when the temperature is reduced, the hood should be so constructed that this residue will not build up too fast upon the inlet, and not at all in the exhaust piping or stack. Since condensates will not adhere to wet surfaces, water either in the form of sprays or from a bubbling tank should be used. Theoretically, all of the condensates, thinners, and solvents used with the polyvinyl-acetal type enamels are condensible in water and, if enough water is used and sufficient wet surfaces exposed to the gas, none of the obnoxious fumes should leave the stack.

✦ ✦ ✦

SINCE many of the condensibles from enameling fumes form solids in water, care should be taken to allow the water to flow into a sump tank or settling-out tank where these solids may accumulate. If allowed to flow directly to a sewer they will fill the system.

✦ ✦ ✦

THE proper ventilation of the building is usually accomplished by ventilating fans, preferably in the roof of the building.

Capstan for Pulling the Wire Through the Equipment

THE conventional mechanical type capstan is driven by a motor and the speed of the capstan varied by use of a mechanical speed adjuster. New type electric equipment coming into use consists of an electric motor directly connected to the capstan shaft, and speed control is maintained by an electrical system. Under this system, it is common to use more than one capstan on a single machine so that two sizes of wire can be enameled in the same equipment at the same time. The capstan itself should have a diameter at least as large as the guide sheaves used.

✦ ✦ ✦

Pick-up Mechanism

THE conventional type pick-up mechanism is usually driven by an electric motor through a multiplicity of gears to drive the necessary number of pick-up heads and ganged traverse mechanisms. As the wire builds up on the reel,

ANNUAL MEDAL AWARD of the WIRE ASSOCIATION

FOR THE MOST MERITORIOUS PAPER ON WIRE MANUFACTURE OR FABRICATION DURING THE YEAR

— BY A MEMBER OF THE WIRE ASSOCIATION —

✦ ✦ ✦

ALL members of the Wire Association are cordially invited to submit technical papers either for publication in "WIRE & WIRE PRODUCTS" during the year or for presentation before the Annual Wire Association Convention.

✦ ✦ ✦

AN annual medal will be awarded in each of the two major divisions of the activities of the Association, to the papers coming nearest to the requirement set forth above.

✦ ✦ ✦

CONSIDERATION for the Medal Awards is not limited to the papers presented at the Annual Meeting, but is given to all papers submitted by members and published in "WIRE & WIRE PRODUCTS" during the year.

✦ ✦ ✦

ADDITIONAL information may be obtained by addressing:

✦ ✦ ✦

SELECTION of papers to be presented at the Annual Convention rests in the hands of the Joint Program Committee and the Board of Directors of the Wire Association.

✦ ✦ ✦

ALL papers submitted become the property of the Wire Association and the Board of Directors constitutes the Committee on Awards.

✦ ✦ ✦

RICHARD E. BROWN,

SECRETARY, THE WIRE ASSOCIATION

300 MAIN STREET STAMFORD, CONNECTICUT

tension control and slowing down of the reel is accomplished by means of a slip clutch.

✦ ✦ ✦

IN the new equipment, each pick-up head is driven by an individual motor directly connected to the pick-up spindle, and an individual traverse mechanism is built into each head. The slip clutch is entirely eliminated as tension is electrically controlled. The traverse mechanism is built into each head, and as the wire builds up from barrel to the outside diameter of the reel, the spacing of the wire remains the same. In the older conventional type pick-up equipment, a gang-type traverse was used, and if the build-up on the reel was 2:1, the spacing of the wire on the outside of the reel was twice that at the barrel.

✦ ✦ ✦

Control Equipment

THE electric oven is controlled by a multiplicity of hand-operated switches, one for each oven circuit. Automatic control of oven temperature, correcting only for the slight differences in room temperature and for changes from day to night operation, is accomplished by controlling automatically a very small percentage of the heat installed in the oven. "On" and "off" types of controls are not recommended for this purpose. In the annealing oven, conventional "on", "off" type control is used.

✦ ✦ ✦

THE design of the new electrically controlled capstans and pick-up mechanisms is such that they are easily built into individual heads, which allow for a multiplicity of arrangements. If it is desirable to add heads to a machine. this can be accomplished easily and, if the process develops so that too many heads are being used on a machine, they can be removed and used on another.

✦ ✦ ✦

Recirculation and Filtering System for Enamel

FOR viscosity control and cleanliness, it is desirable to recirculate and filter the enamel used. In fact, for good production control, it is absolutely essential. One suggested installation is shown in Fig. 5.

✦ ✦ ✦

Lighting System

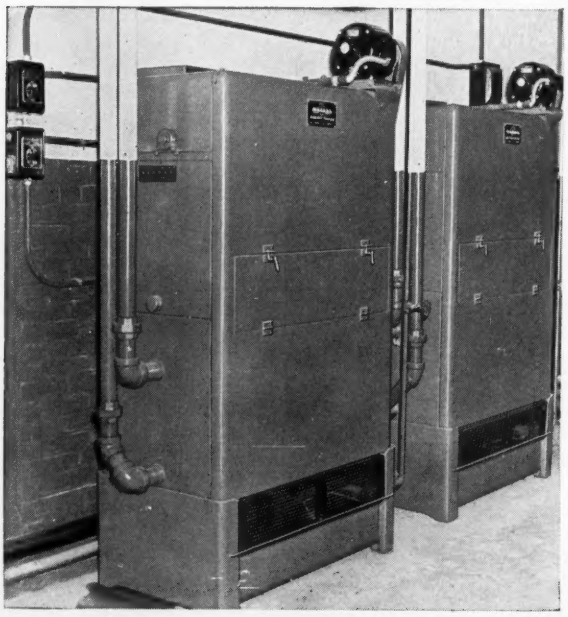
PROPER lighting of all parts of the equipment is essential for quality control and accurate visual inspection of the wire. Fluorescent type electric lamps have proved very successful for this purpose.

✦ ✦ ✦

Wire Brazing Equipment

IN order to obtain a continuous line of wire through the oven, as the wire runs out on one supply reel it is brazed to the wire on the reel replacing it. This is usually accomplished by silver-soldering, which can be done by use of a gas torch, or more successfully by means of an electric brazer which may be installed at each machine or may be mounted on a carriage so that it can be moved from one position to another, as necessary.

CONTROL TEMPERATURE OF COOLING COMPOUNDS With the NIAGARA AERO HEAT EXCHANGER



Niagara Aero Heat Exchangers in use by **SKF**

Proper control of temperature of wire drawing compounds prevents breakage and improves quality.

The NIAGARA AERO HEAT EXCHANGER provides continuous cooling without expensive consumption of city water, saving and recirculating 95% of cooling water by cooling with the evaporation method. Provision is also made for cooling by air alone in winter, or using heat to bring compounds up to desired temperatures when required.

Compounds, lubricants or water are cooled or heated in a closed system preventing adulteration or contamination.

Wire manufacturers, heat treaters and other users of industrial liquids, coolants and lubricants have saved expense, increased production and avoided maintenance troubles by installing the NIAGARA AERO HEAT EXCHANGER.

Write for Bulletin 90

NIAGARA BLOWER COMPANY

Dept. WP-92

General Sales Office: 6 E. 45th Street, New York City
37 W. Van Buren St., Chicago, Ill.
Fourth & Cherry Bldg., Seattle, Wash.
673 Ontario St., Buffalo, N. Y.

District Engineers in Principal Cities

NIAGARA *INDUSTRIAL* COOLING • HEATING • DRYING
HUMIDIFYING • AIR ENGINEERING *EQUIPMENT*

The *ANNUAL CONVENTION* and your *ADVERTISING*

WIRE & WIRE PRODUCTS for October. . . . the Annual Convention Number

Regular advertising is good business. Every manufacturer of wire, machinery or supplies owes it to himself and his industry to keep his name before his customers.

Advertising in the Convention Issue, a part and parcel of the Wire Association Annual Convention, directly contributes to the success of the Convention.

You have plenty to sell. You are selling Victory this year—to your old customers and to your own organization. Besides, hundreds of men are being advanced to positions of importance throughout industry. These men need to know about you, and advertising will inform them. Your advertising now is an investment in the future of our country as well as a service to your industrial contacts in the present emergency.

+ + +

The advertisers of today are the concerns whose officers and executives are men of foresight and courage, men with a long vision of the days of peace to come. Carrying on with appropriate advertising is one of the indispensables to Victory, and helps to keep alive the spirit of free democratic enterprise.

+ + +

From a practical standpoint, the American system of advertising makes possible the wide dissemination of information through technical periodicals, which has been so great a factor in our phenomenal industrial development.

The publishers of WIRE & WIRE PRODUCTS hope to have your continued support, which in turn, enables them to serve you.

WIRE and WIRE PRODUCTS

300 Main Street • Stamford, Conn.

Official Publication of The Wire Association

Safeguarding a Plant Against Sabotage and Espionage

(*Continued from Page 451*)

possible, are confined to their actual work area by industrial fencing.

✦ ✦ ✦

RELATED to the surveillance of personnel is the routine **close** inspection of freight cars, trucks, and other vehicles coming into the property. Lunch boxes are inspected at intervals and, in some cases, it is feasible to prohibit carrying them into the working zones proper. In these cases the boxes are kept in a central lunchroom or service building.

✦ ✦ ✦

THESE measures, of course, constitute but a part of the entire plant protection program. Of equal importance are the means taken to protect the property physically. This involves the complete fencing of all property, with careful thought given to placing the fence in such a way as to preclude access over or through it. At the same time the number of gates and other openings should be reduced to an absolute minimum. Those that are retained should be installed at a guardhouse equipped with a telephone and other accessories. All gates should be kept closed and locked except when in actual use.

✦ ✦ ✦

A PLANT is more vulnerable to entry by force at night. This can be minimized by adequate lighting of fence lines, gates, yard areas, and building approaches. Floodlights should be erected so as to provide overlapping illumination without gaps or dark spots. They should be on standards high enough to prevent tampering, and electric lines should be placed **within** the patrolled zone. Switches and other apparatus should be out of reach of everyone except authorized persons.

✦ ✦ ✦

BUT equipment alone cannot keep out agents of outside interests assigned to damage or throw a plant or a unit out of production. Constant patrols must be maintained within plants proper, and particularly within fence lines. In some instances, squad cars carrying two men armed with pistols and shotguns are advisable and, now that tire stealing has become as serious a crime against an individual as was the theft of a man's mount in pioneer days, such squads are necessary to insure that employee cars on parking lots are not molested.

✦ ✦ ✦

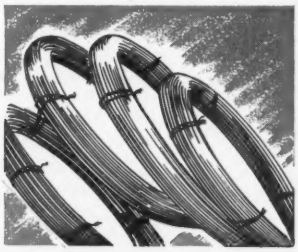
SOME plants have used police dogs to advantage—not only for their alertness and ability to smell out men bent on trouble, but for the companionship and protection they afford a patrolman making his lonesome rounds at night.

✦ ✦ ✦

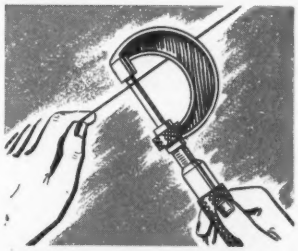
EFFECTIVE execution of any plant protection plan is based on an adequate, well-equipped, and well-trained police force. Under present conditions, the duties of such a force go much further than

(*Please turn to Page 480*)

Use TECO CARBIDE DIES for



QUANTITY



ACCURACY

FINISH...

In meeting today's demands for wire tonnage, Teco Carbide Dies provide substantially increased output of highest quality.

The rigidly controlled uniformity, density and hardness of Teco Carbide Dies insure fast production of wire of the highest degree of accuracy, quality of finish and physical properties.

There is no mystery about the high quality of output of Teco Carbide Dies, for they are the product of more than a quarter-century of experience in the manufacture of tungsten carbides.

It will pay you to make a test run with Teco Carbide Dies. Keep a record of the additional output of on-size wire and note carefully the accuracy and quality of finish.

Tungsten Electric Corporation manufactures

WIRE and BAR DIES — EXTRUDING DIES — SIZING DIES — TUBING DIES . . . *also Carbide blanks, tools, bits and special tools.*

TUNGSTEN ELECTRIC CORPORATION

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Branch Office: 2906 Euclid Avenue, Cleveland, Ohio

Pioneers in Tungsten Carbides for Over a Quarter Century

TECO

Leading Wire Manufacturers With Wartime Contracts Today USE Bell-Mine Pulverized Lime In Wire Drawing Processes

UNIFORM PURITY OF BELL-MINE LIME IS ASSURED BECAUSE

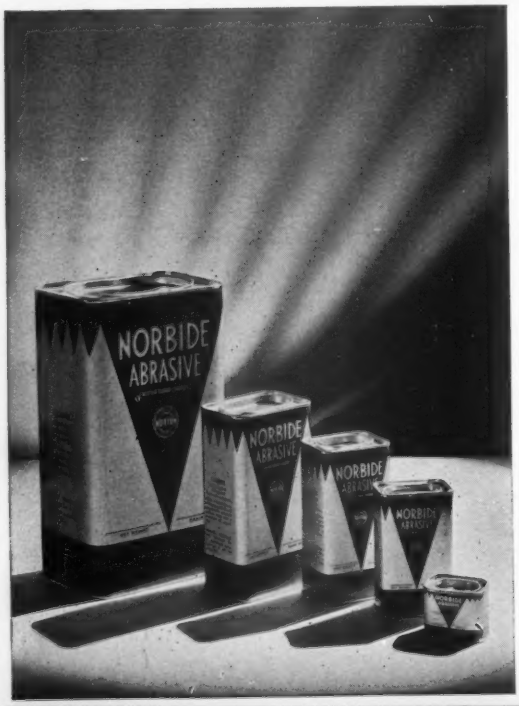
1st The limestone is mined from the Bellefonte vein many feet below ground, and kept free of any surface dirt and foreign stone by all-mechanical handling from mine to crusher to rotary kilns; and

2nd All steps in processing are under constant engineering supervision, both the raw stone and the burned lime from the large rotary kilns being continually analyzed and tested for their quality-uniformity, by trained chemists at the Warner Plant Laboratory.

Warner Company

BELLEFONTE DIVISION

SALES OFFICES: PITTSBURGH, PHILADELPHIA, BELLEFONTE, N. Y. CITY



NORBIDE ABRASIVE

For Cemented Carbide Dies

Used in place of diamond dust it reduces the cost of shaping, ripping and finishing.

NORTON COMPANY
WORCESTER, MASS.

N—38

NORTON ABRASIVES

Safeguarding a Plant Against Sabotage and Espionage

(*Continued from Page 479*)

do those of the old-time watchmen. Police in Monsanto plants are chosen for their youth, alertness, physical bearing, and integrity. Every man has cleared the fingerprint office of the Federal Bureau of Investigation. They are uniformed and armed. Arms were issued only after each man had been thoroughly instructed in their use, so that he would not use them unwisely but could employ them effectively when necessary. Uniforming heightens the policemen's sense of responsibility and raises their morale.

✦ ✦ ✦

THE duties of the plant police force include manning of all gates; inspection of personnel and vehicles entering the property; patrolling the fence line, the buildings, and the yard areas; and the enforcement of the plant protection program in general.

✦ ✦ ✦

ON defense of plants and of key industrial operations the advice and consultation of the Federal Bureau of Investigation are available. This service is of inestimable help in setting up and operating the program.

✦ ✦ ✦

THE important policy to be followed is the treatment of the problem as a whole and planning for its handling in a unified, coordinative manner. And most important is the factor that the most valuable asset any group of stockholders possesses is not a plant, not a process, not an inventory, but the men and women who have been trained to carry on the work. Thus the protection of personnel against injury caused by the acts of outsiders is the chief reason for protection of facilities.

Steel Recovery Corporation Organized

(*Continued from Page 475*)

American Steel Warehouse Association, Cleveland, Ohio. Headquarters of the Steel Recovery Corporation will be established in Pittsburgh.

WPB has already re-directed large quantities of iron and steel from idle inventories into war use. The extensive program now being initiated has been in the process of development for a number of weeks, and will greatly expand this activity. Exact figures are not immediately available, but coming surveys are expected to reveal the location of millions of tons of iron and steel rendered idle by industry's conversion from a peace-time basis to war production.

✦ ✦ ✦

BY the end of this month the first of 250,000 inventory report forms will be mailed to known holders of iron and steel. These will go to 37,000 owners of stainless steel. Similar programs covering other types will follow. Accompanying the forms will be a letter explaining the program and a list of prices at which the Government will purchase material which cannot be used in its existing form and must be remelted before taking its place in the war effort.

✦ ✦ ✦

IN cases of material useable "as is" by qualified war contractors, owners and potential buyers will be notified so that private sales may be arranged.

✦ ✦ ✦

THE Steel Recovery Corporation and WPB's Inventory and Requisitioning Branch and Iron and Steel Branch will work together in the coming program. The Inventory and Requisitioning Branch will be responsible for locating idle iron and steel, for establishing prices at which it will be purchased by the Government, and for requisitioning when other attempts to secure material are unsuccessful. The Iron and Steel Branch will direct allocation of the material to war plants, and the Steel Recovery Corporation will arrange for inspection, supply shipping directions, and handle payments for Government-purchased stocks. It will also bill purchasers of this material on behalf of the Metals Reserve Company.

CALLITE FINE WIRES

in sizes as small as .002" furnished in these metals and alloys . . . for springs, control cables, instruments, control devices, wire cloth, scratch brushes and other applications.

ALUMINUM
BERYLLIUM COPPER
BRASS—ALL GRADES
BRUSH WIRE
COMMERCIAL BRONZE
EVERDUR
NICKEL-SILVER
PHOSPHOR BRONZE
SILVER
SPECIAL ALLOYS
STAINLESS STEEL

Through the years, industry has learned that the one quick way to solve its wire problem is —*call in Callite.*

Twenty years' experience in research, development and production is at your service when you look to Callite engineers for advice — or Callite production experts for wire drawn to Callite standards. These standards, incidentally, insure constant uniformity of size, temper, tolerance and finish — quality unsurpassed in the wire industry. If your operations depend on maximum, trouble-free performance — be *sure* to specify Callite.

FREE — New Wall Chart of Standard Wire Gauges — diameters, physical properties of 15 alloys. On vest pocket card if preferred. Write on company letterhead for your copy. CALLITE TUNGSTEN CORPORATION, 557 - 39th St., Union City, New Jersey. Branches: Chicago, Cleveland.

Callite Wires
CALLITE TUNGSTEN CORPORATION
A FINE WIRE FOR EVERY NEED

SUPERIORITY PROVED!

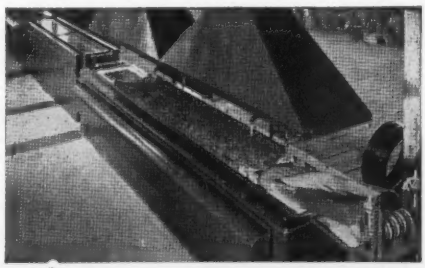
THE *Trauwood* PROCESS
PATENTING
TEMPERING
ANNEALING

Wire Mill Installations of TRAUWOOD equipment for the continuous strand heat treatment of wire, rod and strip have proved:

Higher and More Uniform Physical Properties!

Faster Speeds — Greater Production!

Extreme Flexibility!



Trauwood Electric Wire Tempering and Patenting Unit

Investigate this newest development in the scientific heat treatment of carbon and alloy steel rod, wire and strip. Write today.

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BUILDERS OF

Machinery for the Wire Industry

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The parts shown are typical of the variety of simple or intricate forms and shapes which can be quickly duplicated to a tolerance of .001" with DI-ACRO Precision Machines — Shears, Brakes, Benders. For experimental and research work or production runs, DI-ACRO Units form angle, channel, tube, rod, moulding, wire, strip stock; shear stock sheets, trim duplicated stampings. With Die-Less Duplicating, die expense and time delay are frequently saved. Send for 32-page Catalog—"Metal Duplicating Without Dies".

DI-ACRO THE ORIGINAL MODELS FOR PRECISION MACHINES

O'NEIL-IRWIN MFG. CO.
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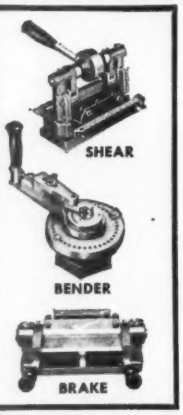

WIRE MILL EQUIPMENT *by* "STANDARD"

TURKS HEADS

Adjustable draw plates—accepted by wire trade as accurate, efficient means of producing rectangular and special shapes. With friction or power driven rolls. Catalog TH.

SWAGING MACHINES

For reducing diameter of tubular and solid bar stock into cylindrical, conical, or "necked" shapes. Capacities from ½" tube, ¼" solid to 6" tube or 3¾" solid. Catalog SM.

DRAW BENCHES

8 sizes, 2 general types. Machines are of one-man type with all controls at die end. Catalog DB.

ALSO

Hand Screw, Foot, and Power Presses; Drop Hammers, and Scrap Bundlers.

ROLLING MILLS—STRIP AND WIRE

Roller bearing and plain bearing mills; many regular sizes or made to suit user's specific needs. Write fully.

✓ your needs for this equipment and write for catalogs.

STANDARD MACHINERY CO., PROVIDENCE, R. I.

WATCH OUT FOR THIS ONE!

Hotel Reservations may be made by members of The Wire Association direct with the Hotel Carter, Cleveland, Ohio, *Prior to Sept. 28.* After that date no more reservations will be accepted for a specific hotel, but will all be referred to the Central Housing Bureau of The American Society for Metals for allocation to such hotel as may have space available. *Watch out for this — Make your plans now to attend and send your reservation card in promptly.*

Streamlining Pickle-House Procedure

(*Continued from Page 454*)

by the inclusion of one of the commercially available, and very efficient wetting agents, and hence this incorporated wetting agent allows the cleaning and coating compound to penetrate pore-deep into the metal and neutralize this acid, in cases where the rinse-water itself cannot penetrate. Acid-embrittlement is thus avoided and die-life increased.

✦ ✦ ✦

WHILE the practice of sull-coating has in many wire mills been discontinued, the time and equipment necessary to carry out this operation may be entirely done away with, and a mere immersion of the coils of wire or rods in this coating compound will quickly produce a minute, though firm film on the wire, far superior to any sull-coat operation. A Philadelphia Wire Mill, specializing in the drawing and production of high-carbon shapes for lock-washer stock, formerly consumed as high as sixty minutes of very valuable time building up a sull-coat upon the wire. Their method of spraying the coils while subjecting them to air-oxidation was supplanted by simply dipping them for a minute or so in a tub of the coating and cleaning compound in question, and then proceeding with the usual liming operations. The time and expense of handling thus saved will go far toward reducing the final cost of a finished ton of rods.

✦ ✦ ✦

IN several instances it has been proven that the coating of the wire in the suggested manner, plus a light lime coat, produced much better results than the former method of combining a light lime coat and then a heavy lime coat. A more positive bond, due to increased adhesion power, hence more difficult to remove under die-pressure, appeared to result from such a combination. In these cases the heavy lime tub was discarded.

✦ ✦ ✦

IN conclusion, it may be stated that several definite facts have been proven concerning the use of

Have You a Drawing Problem?

WIRE DRAWING LUBRICANTS

for every purpose

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this material, and that several more possibilities, pending further data, are likely:

(1) **Entire elimination of the rinse-water step following the usual alkaline wash.**
(2) **Satisfactory substitution for, and hence removal of, the sull-coating operation.**
(3) **The provision of an excellent rust-proofing and oxide-inhibiting coating.**
(4) **The positive formation of a fine base for future liming and use of lubricants, and an efficient carrying agent for same.**
(5) **The complete and positive neutralization of pore-trapped acid in the metal.**
(6) **The elimination of the lime-dip, within certain, as yet, undetermined limits, pending further data.**

✦ ✦ ✦

Diamond and Gem Stone Industrial Production

THE above is the title of a new book written by Paul Grodzinski and published by the N.A.G. Press, Ltd., 226 Latymer Court, London, W. 6., England.

✦ ✦ ✦

FOR nearly two and a half centuries gem stones have been used as Jewel-bearings in watches. The use of diamonds and gem stones as dies for fine wire drawing, and of diamonds for cutting tools, is comparatively recent. Today it is extensive and increasing. In this book the author has brought together all the data and information available on the subject and has added the results of his own experience and research. Although dealing mainly with the actual production of the dies and tools, the knowledge this book imparts is of prime importance to tool users. Efficiency and economy in the use of diamond and gem stone dies and tools is not possible without a knowledge of production methods.

✦ ✦ ✦

IN general the subjects covered are general methods including: Technology of Machining Methods, Dividing of Diamonds and Gem Stones, Bruting, Cutting and Polishing, Drilling and Boring of Holes, Carving and Engraving, Diamond Dust, and Diamond Dust Impregnated Tools.

✦ ✦ ✦

PART 2 is devoted to special manufacturing methods covering: The Manufacture of Diamonds and Gem Stones for Ornamental Purposes, The Manufacture of Watch and Pivot Bearings, Manufacture of Diamond and Hardmetal Dies, Industrial Diamonds, Setting Industrial Diamonds and Grinding and Lapping of Sintered Carbides.

✦ ✦ ✦

THERE are also reference tables and a large number of specially drawn illustrations included in this book. An endeavour has been made to leave no phase of the subject untouched.

✦ ✦ ✦

THE price of the book is 15/-d. in England, plus postage. Readers of this magazine may obtain copies by addressing Book Department, WIRE & WIRE PRODUCTS.

Remember Sam in the Sunday comics? All his experiences started with: "I seen yo' ad in de paper." YOU see the advertising of leading concerns in WIRE & WIRE PRODUCTS. When writing them, please say you saw their ad in WIRE & WIRE PRODUCTS. Advertising service is fundamentally American.

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Are you preparing wire and wire products for black, tinned, zinc or other finishes? If so, you know how important it is for the base metal surfaces to be CHEMICALLY CLEAN! ALL smut, oil, grease and dirt must be removed if subsequent finish is to have the requisite adhesion properties and durability.

Let effective Oakite degreasing help you do this work FASTER and EASIER. It is thorough, removes ALL foreign matter, reduces rejects. And because Oakite cleaning does this SPEEDIER, it helps keep production moving smoothly, AHEAD of schedule! Put your finishing problems up to us . . . we can help! Write today.

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OAKITE CERTIFIED CLEANING
MATERIALS · METHODS · SERVICE

If you MAKE or USE WIRE YOU NEED ONE OF THE MANY

Porter Cutters

Indispensable in wire mills for sampling large wire.

In almost universal use by wire fabricators for cutting reinforcing fabric, fencing, spring wire, etc.

Useful in any plant—large or small—for all sorts of maintenance and repair work—for cutting bolts, rods, wires, rivets, wire rope, chains, or for splitting deformed or "frozen" nuts.

There is a standard Porter tool for every cutting job up to ¾" annealed bolts or ½" hardened chains. Special cutters designed to fit your industry's needs.

Send for Catalog of PORTER CUTTERS.

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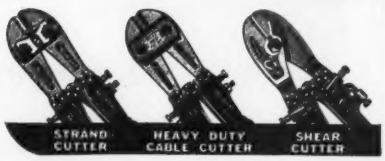

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One of our numerous types of Multiple Pull-outs and Take-ups for use in connection with Tinning, Annealing, and Saturating Processes, etc.

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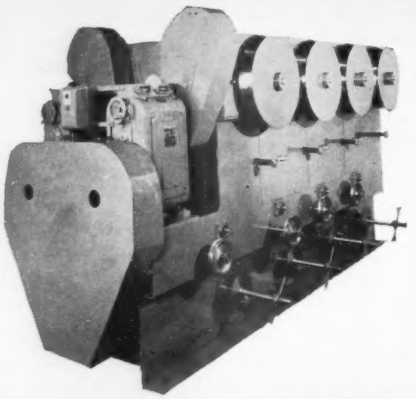
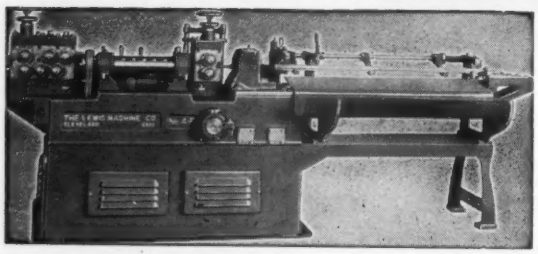


LEWIS TRAVELCUT WIRE STRAIGHTENING and CUTTING Machines



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Automatic
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FOR SWAGING, STAMPING, PIERCING, BLANKING, FORMING OF COILED METAL

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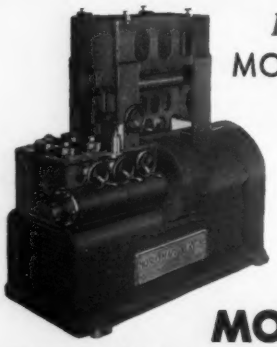

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★ Modernize your welding rod manufacturing equipment by installing a MOSLO AUTOMATIC WIRE FEEDER. The precision and durability of this machine guarantees efficient, economical operation.

Write Today For Free Folder

MOSLO MACHINERY, Inc.

4518 SUPERIOR AVENUE CLEVELAND, OHIO

The Manufacturing Specification

(*Continued from Page 455*)

for amendment or 'improvement'; furthermore, such specific instructions will allow of no personal interpretation on the part of operatives or supervisors who, whilst reading or understanding one thing may assume and carry out something entirely different.

✦ ✦ ✦

The Customer's Name and the Specification

MOST factories entertain a variety of orders and assign preparation and completion of those orders to particular departments. Familiarity is brought about by constant repetition and repeat orders are inclined to be followed by the inclusion of the customer's name on the manufacturing specification. The frequent result of this is that the operatives are not so much engaged on the fulfilment of instructions as on the completion of the orders for "Smith's hawsers" or "Robinson's ropes." There can be no denial of the claim that the employment of names may, in some ways, facilitate execution but it must be remembered that the publication of customers' names within the factory is not dis-associated with a certain amount of danger. Mis-use of such information and knowledge, whether knowingly or unwittingly, is likely to be encouraged whilst from the contractual standpoint such disclosures to operatives are neither essential nor necessary. It is recommended that wherever practicable the continuance of such disclosures is a procedure to be avoided. The information which the name conveys is easily substituted by the inclusion of a factory serial number, a process which is a direct step toward the simplification of records and filing. Whilst the production order or manufacturing specification should contain every detail essential to the proper execution of contracts, it is equally important that all unnecessary and irrelevant data is omitted.

Government Wire Production Information

(*Continued from Page 471*)

wire which has been prefabricated into forms commonly identified in the industry as:

Aligno; Aligned Spiral; Coil, Cercla; Flex-o-Coil; Gee-Gee Wire Coil, twin loop and double loop; Kamket; Limited; Multo-O; No. 7 Patented Binding; Overwire; Parallex; Streamliner; Spiralastic; Swing-o-ring; Tubak and Tubak Rings; Tally-Ho; and Wire-O.

✦ ✦ ✦

Iron and Steel for Binders Cut to 30 Percent of 1941 Output

THE amount of iron and steel that may be fabricated or assembled into metal parts or units for blank books, loose-leaf books, binders or covers has been limited to 30 percent of 1941 consumption by the Director General for Operations.

✦ ✦ ✦

AT the same time, these blank book and loose-leaf metal parts and units were removed from the terms of the general steel conservation order, M-126, which would have prohibited fabrication of any parts except for the Army and Navy. The new order contains no exemption for orders from the armed services.

✦ ✦ ✦

CERTAIN styles of books and parts in which iron and steel is used must be eliminated entirely under the terms of the order. These include student note books, pocket memorandum books, zipper-bound ring books, compression-type ledger binders and certain other styles and specialty features considered non-essential.

✦ ✦ ✦

WPB Classifies Canadian Companies on Same Basis as American

CANADIAN companies have been placed on the same basis as American companies insofar as the War Production Board's classification of the end use of their products is concerned. Through an amendment to the general instructions governing the Allocation Classification System the Director General for Operations ordered that no distinction be made between the purchaser's symbol of a Canadian and an American firm.

WIRE DRAWING LUBRICANTS
HIGH OR LOW CARBON WIRE, COLD HEADING,
BRIGHT AND WET WIRE DRAWING.
STANDARD "WIRE DRAW"
SPECIALLY ADAPTED FOR HIGH SPEED DRAWING MACHINES
BETTER FINISHED WIRE — LOWER DIE COSTS
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STEELSKIN
REG. U. S. PAT. OFFICE
For High or Low Carbon Wire
WIRE DRAWING SOAPS
Established 30 years
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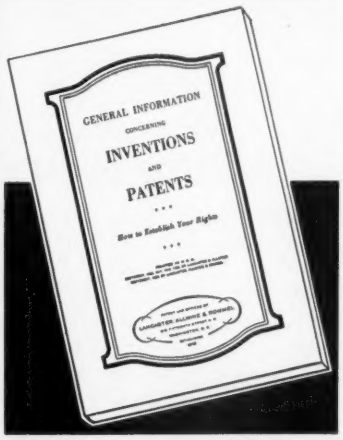

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Outstanding Personalities of the Wire Industry

(*Continued from Page 473*)

District Office and also continues his duties as Compliance Coordinator for the Purchasing Department.

✦ ✦ ✦

A. S. VANDERVOORT, JR., for many years District Sales Manager for Pittsburgh Steel Company at Houston, Texas, is now commissioned as a Captain in the Army Air Corps. **Paul R. King,** who has been connected with the Company's Houston office for several years has been made Acting District Sales Manager for that office.

✦ ✦ ✦

E. F. Early, Gen. Supt., Worcester District, Wickwire Spencer Steel Company

EDWARD F. EARLY, Superintendent of the Morgan Works of the Wickwire Spencer Steel Company, has been named General Superintendent of the Worcester, Mass., District of the Company, **E. C. Bowers,** President, announced. In the future, Mr. Early will have supervision over the Morgan and Goddard Works in Worcester and the Clinton, Mass., Works.

✦ ✦ ✦

MR. EARLY'S entire business career has been with Wickwire Spencer Steel Company. His first employment was as an errand boy in the Morgan Works in June, 1910. He was successively spring maker, transportation foreman, assistant foreman of the spring department, production clerk, wire mill foreman and assistant superintendent. He became superintendent of the Works in 1929.

✦ ✦ ✦

MR. EARLY'S headquarters will be in Worcester.

✦ ✦ ✦

The Elwell-Parker Electric Company Elects New Officers

FOLLOWING the passing of former President **Morris S. Towson** on March 17th, the newly elected officers of the Elwell-Parker Electric Co., Cleveland, Ohio, are **S. K. Towson,** President and General Manager; **W. A. Meddick,** Vice President.

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Bull Blocks and Benches, Continuous Wire Drawing Machines, Spoolers, Pointers, String-up Machines, etc.
And —
Cold Heading Machinery.
WATERBURY FARREL FOUNDRY & MACHINE CO.
Waterbury, Conn.

War Production Convention of The Wire Association

(*Continued from Page 458*)

A. E. Glen, Assistant to General Sales Manager, Carboloy Company, Inc., Detroit, Mich.

W. H. Crawford, Resident Manager, Reliance Spring Washer Div., Eaton Manufacturing Company, Massillon, Ohio.

Richard E. Brown, Editor and Publisher, WIRE & WIRE PRODUCTS, Stamford, Conn.

✦ ✦ ✦

National Metal Congress

THIS year's National Metal Congress has been entitled "The War Production Edition of the National Metal Exposition."

✦ ✦ ✦

THE 1942 War Production Edition of the National Metal Exposition will be a 100% educational demonstration clinic devoted to increased production, planning, engineering, improvement of materials, job training, conservation, substitution and maintenance. Varied exhibits, catalogues, blueprints, personal conferences and group discussions will also aid in accomplishing the desired end of greater, speedier production.

✦ ✦ ✦

IN addition to the ASM, three other technical societies will cooperate in the 1942 War Production Edition of the National Metal Exposition as well as the National Metal Congress. They are the **American Welding Society, the Wire Association, and the Iron and Steel division and Institute of Metals division of the American Institute of Mining and Metallurgical Engineers.** Technical sessions of the four societies are being directed to discussions of ways and means to bring the United Nations an early victory through greater and speedier production.

✦ ✦ ✦

IT is time to pool ideas and information. It is time to cooperate; to consider the other fellow's viewpoint and his problems;

(*Please turn to Page 488*)

MACHINES FOR THE LINEAR MEASUREMENT OF WIRE
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5—Baird No. 4—Four Slide Wire Machines
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1—Two Spindle Bull Block Motor Driven
6—Lewis Welding Wire S. & C. Machines M. D.
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8—Shuster Round Wire Straightening & Cutting Machines 1/32"-½"
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War Production Convention of The Wire Association

(*Continued from Page 487*)

to provide full opportunities for the exchange of experiences; for the cross-checking of all progress for the benefit of the war effort as a whole; and to further assist America's metal industry in its major role in the battle of production.

✦ ✦ ✦

EXECUTIVE, production and engineering factors in the metal fabricating industry, are to a large extent unknown under present, fast-changing circumstances. Men trained in other fields have taken places of responsibility in the metal industry. They must be reached and be helped. This national meeting place, established over a period of twenty-four years, provides an effective means of communicating with them and presenting a comprehensive picture of the vital factors of equipment, machines, processes, and materials that provide and produce the weapons of war.

✦ ✦ ✦

Champion Diamond Company Organized

THE Champion Diamond Company, with offices at 551 Fifth Avenue, New York, N. Y., has been organized by **William Schwartz** formerly with Anton Smit & Company, Inc., of New York, for fifteen years as an executive.

✦ ✦ ✦

MR. SCHWARTZ recently severed his connection with that Company and organized the Champion Diamond Company for the purpose of furnishing diamond dressing wheels, diamond core bits, diamond dies, diamond saw blades, diamonds for glass cutting, and diamond powder.

✦ ✦ ✦

OUR best wishes for success go to Mr. Schwartz in his new venture.

✦ ✦ ✦

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LYNN, MASSACHUSETTS
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WHERE TO BUY

For more complete information, consult the annual Wire and Wire Products Directory, Index & Buyers' Guide.

ABRASIVES—
Norton Co., Worcester, Mass.

ACID INHIBITORS—
American Chemical Paint Co., Ambler, Pa.

AIR DRAW FURNACES—
Carl-Mayer Corp., The, Cleveland, Ohio.

ALKALINE CLEANERS—
American Chemical Paint Co., Ambler, Pa.

ANNEALING MACHINES—Open Flame
Syncro Machine Co., Rahway, N. J.

ANNEALING POTS AND BOXES—
National Annealing Box Co., Washington, Penna.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.

ARMORING EQUIPMENT—
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

BAKERS—Hi-Speed
Carl-Mayer Corp., The, Cleveland, Ohio.

BAKERS—Rod and Wire
Carl-Mayer Corp., The, Cleveland, Ohio.
Morgan Construction Co., Worcester, Mass.
Moslo Machinery Co., Cleveland, Ohio.
Ross, J. O., Engineering Corp., New York, N. Y.

BENDERS—
O'Neil-Irwin Mfg. Co., Minneapolis, Minn.

BERYLLIUM COPPER — Strip and Bars
Callite Tungsten Corp., Union City, N. J.

BOBBINS—Braider and Wire Weaving
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

BORON CARBIDE—
Norton Co., Worcester, Mass.

BRAKES & SHEARS—
O'Neil-Irwin Mfg. Co., Minneapolis, Minn.

CARRIERS—Braider, High Speed
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.

CASTINGS—Wire Mill
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

CEMENTS—Refractory
Norton Co., Worcester, Mass.

CHEMICALS—Cleaning
American Chemical Paint Co., Ambler, Pa.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

CLEANERS—Hand and Metal
American Chemical Paint Co., Ambler, Pa.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

CLEANING & PICKLING EQUIPMENT—
Broden Construction Co., Cleveland, O.
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CLOTH TESTERS—
Scott, Henry L., Co., Providence, R. I.

CLOTH—Wire, All Metals
Callite Tungsten Corp., Union City, N. J.

WHERE TO BUY, Continued

COILERS—Sheet, Strip and Wire
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.

COLD HEADERS—
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

COMPOUNDS—Coppering
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Metal Finishing
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Rust Preventing
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Rust Removing
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Wire Drawing
Oakite Products, Inc., New York, N. Y.
Richards, G. Whitfield, Philadelphia, Pa.
Standard Industrial Compounds Co., Chicago, Ill

CONTROLS—Heat Treating
Niagara Blower Co., Buffalo, N. Y.

CONTROLS—Temperature
Niagara Blower Co., Buffalo, N. Y.

COPHOLDERS—Steel
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

CRANES—Wire Mill
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CUSTOM WIRE DRAWING—
Hy-Carbo Steel Co., Lowell, Mass.

CUTTING TOOLS—Carbide
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Vascoloy-Ramet Corp., North Chicago, Ill.

CUTTING TOOLS—Wire
Porter, H. K., Inc., Everett, Mass.

DIAMONDS—Industrial
Callite Tungsten Corp., Union City, N. J.

DIAMOND POWDERS—
Rusch Wire Die Corp., New York, N. Y.

DIAMOND TOOLS—
Rusch Wire Die Corp., New York, N. Y.

DIE MAKING MACHINERY — For Forming Special Shapes
O'Neil-Irwin Mfg. Co., Minneapolis, Minn.

DIES—Diamond
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Cochaud Wire Die Corp., New York, N. Y.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Krause, F., & Co., Hillside, N. J.
Rusch Wire Die Corp., New York, N. Y.
Vianney Wire Die Works, New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIES—Lead Extrusion
Robertson, John, Co., Brooklyn, N. Y.

DIES—Repairs & Re-Cutting
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Cochaud Wire Die Corp., New York, N. Y.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Krause, F., & Co., Hillside, N. J.
Rusch Wire Die Corp., New York, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Rod and Tube Drawing
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., New York, N. Y.
Tungsten Electric Corp., Union City, N. J.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Tantalum Carbide
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., New York, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Tungsten Carbide
Balloffet Dies & Nozzle Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., New York, N. Y.
Tungsten Electric Corp., Union City, N. J.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIRECT ELECTRIC RESISTANCE HEATING—
Trauwood Engineering Co., Cleveland, Ohio.

DRAW BENCHES—
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Standard Machinery Co., Providence, R. I.
Vaughn Machinery Co., Cuyahoga Falls, O.

DRUMS—Flange Steel
Stevens Metal Products Co., Niles, O.

DRUMS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.

DRYING EQUIPMENT—
Niagara Blower Co., Buffalo, N. Y.

ENGINEERS—Consulting Wire Mill
Hartley, George D., Worcester, Mass.
Lewis, Kenneth B., Worcester, Mass.

EQUIPMENT—Humidifying
Niagara Blower Co., Buffalo, N. Y.

EQUIPMENT—Industrial Cooling
Niagara Blower Co., Buffalo, N. Y.

EQUIPMENT—Insulation Testing
Davis, R. L., Electric Co., Wallingford, Conn.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FLUXES—Soldering
American Chemical Paint Co., Ambler, Pa.

FOAM PRODUCING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.

FURNACES—Annealing
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio
Trauwood Engineering Co., Cleveland, Ohio.

FURNACES—Automatic
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio

FURNACES—Brazing
Electric Furnace Co., Salem, O.
Firth-Sterling Steel Co., McKeesport, Pa.

FURNACES—Bright Annealing
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio

FURNACES—Electric
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio
Trauwood Engineering Co., Cleveland, Ohio.

FURNACES—Hardening and Tempering
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio
Trauwood Engineering Co., Cleveland, Ohio.

FURNACES—Lead Melting
Electric Furnace Co., Salem, O.
Robertson, John, Co., Brooklyn, N. Y.

FURNACES—Non-Oxidizing
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio

FURNACES—Normalizing
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.

FURNACES—Salt Bath
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio

FURNACES—Wire, Strip & Sheet
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion, Div. of General Properties Co., Inc., Toledo, Ohio

GAGES—
Federal Products Corp., Providence, R. I.

GALVANIZING KETTLES—
National Annealing Box Co., Washington, Penna.

GRINDERS—ROLL
Norton Co., Worcester, Mass.

HI-SPEED BAKERS—
Carl-Mayer Corp., The, Cleveland, Ohio.

HOISTS—Electric Travelling
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

INHIBITORS—Pickling
American Chemical Paint Co., Ambler, Pa.

KETTLES — Galvanizing, Annealing, Tinning, etc.
National Annealing Box Co., Washington, Pa.

LATHES—Die Reaming
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

LIME—
Warner Co., Bellefonte, Pa.

LUBRICANTS—For Metal Cutting Stamping and Drawing
Miller, R. H., Co., Inc., Homer, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

LUBRICANTS—Wire Drawing
Bick, Hans C., Inc., Reading, Pa.
Miller, R. H., Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Richards, G. Whitfield, Philadelphia, Pa.
Standard Industrial Compounds Co., Chicago, Ill.

MACHINERY — Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Robertson, John, Co., Brooklyn, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Braiding
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Watson Machine Co., Paterson, N. J.

MACHINERY—Brazing
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.

MACHINERY—Bunching
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cable, Electric
American Insulating Mach'y Co., Phila., Pa.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Chain Making
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Closing
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coil Winding
Robinson Mfg. Co., Muncy, Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Coilers
Broden Construction Co., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
New England Butt Co., Providence, R. I.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.
Watson Machine Co., Paterson, N. J.

WHERE TO BUY, Continued

MACHINERY—Copper Wire Drawing and Rolling
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Rahway, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Covering Wire
Fidelity Machine Co., Philadelphia, Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Cutting
Broden Construction Co., Cleveland, O.
Lewis Machine Co., The, Cleveland, O.
Moslo Machinery Co., Cleveland, Ohio.
National Machinery Exchange (Used), New York, N. Y.
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Shuster, F. B., Co., New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Die Making
Firth-Sterling Steel Co., McKeesport, Pa.

MACHINERY — Die Making for Forming Special Shapes
O'Neil-Irwin Mfgr. Co., Minneapolis, Minn.

MACHINERY—Draw Benches
Standard Machinery Co., Providence, R. I.

MACHINERY—Edging
Standard Machinery Co., Providence, R. I.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Extruding
National Erie Corp., Erie, Pa.
Robertson, John, Co., Brooklyn, N. Y.
Royle, John, & Sons, Paterson, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Flat Wire
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Forming
National Machinery Exchange (Used), New York, N. Y.
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.

MACHINERY—Galvanizing Wire
Broden Construction Co., Cleveland, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Gang Winders
Fidelity Machine Co., Philadelphia, Pa.
Robinson Mfg. Co., Muncy, Pa.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Grinding
Norton Co., Worcester, Mass.

MACHINERY—Insulating
American Insulating Mach'y Co., Phila., Pa.
Fidelity Machine Co., Philadelphia, Pa.
National Erie Corp., Erie, Pa.
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Knitting
Fidelity Machine Co., Philadelphia, Pa.

MACHINERY—Lead Encasing Presses, etc.
Robertson, John, Co., Brooklyn, N. Y.

MACHINERY—Lead Stripping
Robertson, John, Co., Brooklyn, N. Y.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Material Handling
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

MACHINERY — Measuring Wire & Cable
Davis, R. L., Electric Co., Wallingford, Conn.
Durant Mfg. Co., Milwaukee, Wis.
Lyon-Vail Machine Co., Inc., Brockton, Mass.
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail and Tack
Glader, Wm., Machine Works, Chicago, Ill.
National Machinery Exchange (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Panning
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Pointing
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Quill Winding
Fidelity Machine Co., Philadelphia, Pa.

MACHINERY—Rod Mill
Broden Construction Co., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J., Machine Co., Newark, N. J.

MACHINERY—Rolling Mill
Broden Construction Co., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
National Machinery Exchange (Used), New York, N. Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Rubber for Insulating Wire
National Erie Corp., Erie, Pa.
Royle, John, & Sons, Paterson, N. J.

MACHINERY—Rubber Strip Covering
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Rubber Tubing and Straining
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Screw Wire
National Machinery Exchange (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Special
American Insulating Mach'y Co., Phila., Pa.
Broden Construction Co., Cleveland, O.
Emory, Robert J., Co., Newark, N. J.
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I. (Special Designs)
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Spooling
American Insulating Mach'y Co., Phila., Pa.
Emory, Robert J., Co., Newark, N. J.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Spring Making
National Machinery Exchange (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Straightening
Broden Construction Co., Cleveland, O.
Lewis Machine Co., The, Cleveland, O.
Moslo Machinery Co., Cleveland, Ohio.
National Machinery Exchange (Used), New York, N. Y.
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Ruesch, H. J., Machine Co., Newark, N. J.
Shuster, F. B., Co., New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

MACHINERY—Stranding
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.

Machinery—Swaging
National Machinery Exchange (Used), New York, N. Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Taping
American Insulating Mach'y Co., Phila., Pa.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Testing
Robinson Mfg. Co., Muncy, Pa.
Scott, Henry L., Co., Providence, R. I.

MACHINERY—Testing Size of Wire
Davis, R. L., Electric Co., Wallingford, Conn.

MACHINERY—Testing—Spring
Standard Machinery Co., Providence, R. I.

MACHINERY—Tinsel Rolling Mills
American Insulating Mach'y. Co., Phila., Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Trolley Wire
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill
Ruesch, H. J., Machine Co., Newark, N. J.

MACHINERY—Welding Wire
Micro Products Co., Chicago, Ill.
Shuster, F. B., Co., New Haven, Conn.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.

MACHINERY—Winding
American Insulating Mach'y Co., Phila., Pa.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Bending
O'Neil-Irwin Mfg. Co., Minneapolis, Minn.

MACHINERY—Wire Drawing
American Insulating Mach'y Co., Phila., Pa.
Broden Construction Co., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
National Machinery Exchange (Used), New York, N. Y.
Robinson Mfg. Co., Muncy, Pa.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Wire Measuring
Durant Mfg. Co., Milwaukee, Wis.
Lyon-Vail Machine Co., Inc., Brockton, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Robinson Mfg. Co., Muncy, Pa.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Tinning
American Insulating Mach'y. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Wood Screw
National Machinery Exchange (Used), New York, N. Y.

MATERIAL HANDLING EQUIPMENT—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

MILLS—Tandem Rolling and Edging
Standard Machinery Co., Providence, R. I.

NICKEL SILVER AND PHOSPHOR BRONZE—Rod, Wire and Strip
Hudson Wire Co., Ossining, N. Y.

WHERE TO BUY, Continued

OILS—Wire Drawing
Richards, G. Whitfield, Philadelphia, Pa.
Standard Industrial Compounds Co., Chicago, Ill.

OVENS—Industrial
Carl-Mayer Corp., The, Cleveland, Ohio.
Ross, J. O., Engineering Corp., New York, N. Y.

PAINTS—Heat Resisting
American Chemical Paint Co., Ambler, Pa.

PAINTS—Marine
American Chemical Paint Co., Ambler, Pa.

PAINTS—Structural Steel
American Chemical Paint Co., Ambler, Pa.

PANS—Lead and Spelter
National Annealing Box Co., Washington, Penna.

PANS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.

PAPER—Creped Wrapping
Crepe-Kraft Co., Newark, N. J.

PAPER TESTERS—
Scott, Henry L., Co., Providence, R. I.

PATENT ATTORNEYS—
Lancaster, Allwine and Rommel, Washington, D. C.

PICKLING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.

PLASTIC TESTERS—
Scott, Henry L., Co., Providence, R. I.

POTS—Lead Melting
Robertson, John, Co., Brooklyn, N. Y.

POWDER—Wire Drawing
Richards, G. Whitfield, Philadelphia, Pa.

PRESSES—Hydraulic and Mechanical
Robertson, John, Co., Brooklyn, N. Y.
Standard Machinery Co., Providence, R. I. (Mechanical Only)

PRESSES—Lead
Robertson, John, Co., Brooklyn, N. Y.

PRESSURE VESSELS—
National Annealing Box Co., Washington, Penna.

PULLERS—Wire
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.

PUMPS—Hydraulic
Robertson, John, Co., Brooklyn, N. Y.

QUENCHING BATH CONTROLS—
Niagara Blower Co., Buffalo, N. Y.

REEL AND TENSION STAND—
Fidelity Machine Co., Philadelphia, Pa.
Moslo Machinery Co., Cleveland, Ohio.
Robinson Mfg. Co., Muncy, Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

REEL CRUTCHES—
Watson Machine Co., Paterson, N. J.

REELS—Annealing and Stranding
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Moslo Machinery Co., Cleveland, Ohio.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Shuster, F. B., Co., New Haven, Conn.
Stevens Metal Products Co., Niles, O.

REELS—Steel
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

REELS AND SPOOLS—Shipping and Shop
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

REELS—Takeoff
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Moslo Machinery Co., Cleveland, Ohio.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Shuster, F. B., Co., New Haven, Conn.
Stevens Metal Products Co., Niles, O.

REELS—Vulcanizing and Impregnating
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Shuster, F. B., Co., New Haven, Conn.
Stevens Metal Products Co., Niles, O.

REELS—Wire Drawing
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Moslo Machinery Co., Cleveland, Ohio.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

REFRACTORIES—High Temperature
Norton Co., Worcester, Mass.

ROD BAKERS—
Carl-Mayer Corp., The, Cleveland, Ohio.
Moslo Machinery Co., Cleveland, Ohio.
Ross, J. O., Engineering Corp., New York, N. Y.

RODS—Wire—Non-Ferrous
Hudson Wire Co., Ossining, N. Y.
Platt Bros. & Co., The, Waterbury, Conn.

RODS—Wire—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.

ROLL STRAIGHTENERS—
Moslo Machinery Co., Cleveland, Ohio.

RUBBER AND RUBBER COMPRESSION TESTERS—
Scott, Henry L., Co., Providence, R. I.

RUST PROOF COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.

RUST REMOVING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.

SHEARS—
O'Neil-Irwin Mfg. Co., Minneapolis, Minn.

SHEET—Steel
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.

SOAPS—Industrial and Wire Drawing
Miller, R. H., Co., Inc., Homer, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

SPOOLS—Annealing and Wire Drawing
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

SPOOLS—Shipping and Shop
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

SPOOLS—Steel
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

STAMPINGS—Steel
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

STRIP—Brass and Non Ferrous
Hudson Wire Co., Ossining, N. Y.

STRIP—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Firth-Sterling Steel Co., McKeesport, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.

STRIP METAL TESTERS—
Scott, Henry L., Co., Providence, R. I.

SWIFTS—Take-off
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.

TANKS—Compound
Watson Machine Co., Paterson, N. J.

TANKS—Steel
Mossberg Pressed Steel Corp., Attleboro, Mass.

TEMPERATURE CONTROLS—
Niagara Blower Co., Buffalo, N. Y.

TENSILE TESTERS—
Scott, Henry L., Co., Providence, R. I.

TESTING INSTRUMENTS—
Scott, Henry L., Co., Providence, R. I.

TOOLS—Wire Cutting
Porter, H. K., Inc., Everett, Mass.

TRAMRAIL SYSTEMS—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

TREADS—Safety
Norton Co., Worcester, Mass.

TRUCKS—
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

TUBE BENDERS AND FORMERS—
Ruesch, H. J., Machine Co., Newark, N. J.

TURKS HEADS—Friction and Power Driven
Standard Machinery Co., Providence, R. I.

VULCANIZERS—
Watson Machine Co., Paterson, N. J.

VULCANIZING PANS—
American Insulating Mach'y. Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.

WELDERS—Spot and Butt
Micro Products Co., Chicago, Ill.
Moslo Machinery Co., Cleveland, Ohio.

WIRE—Cold Heading
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.

WIRE DRAWING — High Grade Custom
Hy-Carbo Steel Co., Lowell, Mass.

WIRE—Electric
Hudson Wire Co., Ossining, N. Y.

WIRE—Enameled For Coils
Winsted Div. of Hudson Wire Co., Winsted, Conn.

WIRE—Manufacturers
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Firth-Sterling Steel Co., McKeesport, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.

WIRE—Music
Jersey Steel & Wire Corp., Irvington, N. J.

WIRE—Nickel Silver and Phosphor Bronze
Callite Tungsten Corp., Union City, N. J.
Hudson Wire Co., Ossining, N. Y.

WIRE—Non Ferrous to Specification For Special Purposes
Callite Tungsten Corp., Union City, N. J.
Hudson Wire Co., Ossining, N. Y.
Winsted Div. of Hudson Wire Co., Winsted, Conn.

WIRE—Spring
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Firth-Sterling Steel Co., McKeesport, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.

WIRE—Stainless Steel
Callite Tungsten Corp., Union City, N. J.
Firth-Sterling Steel Co., McKeesport, Pa.

WIRE—Steel—Also Coppered Steel—Also Galvanized Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.

WIRE AND STRIP—Zinc
Platt Bros. & Co., The, Waterbury, Conn.

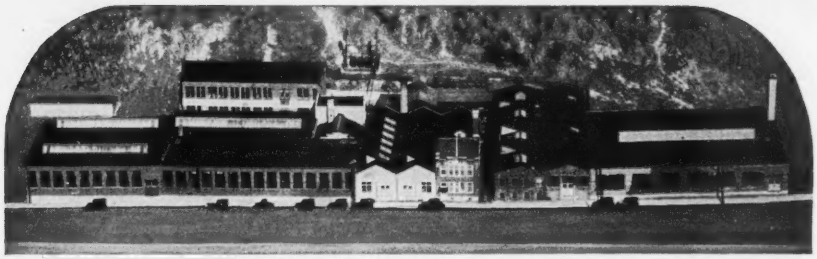
WIRE TESTERS—
Scott, Henry L., Co., Providence, R. I.

WIRE, WEAVING—Non Ferrous
Hudson Wire Co., Ossining, N. Y.

WRAPPING PAPER—Creped
Crepe-Kraft Co., Newark, N. J.

YARN TESTERS—
Scott, Henry L., Co., Providence, R. I.

HUDCO



HUDSON WIRE CO. PLANT AT OSSINING, N. Y.

This plant is one of the most up-to-date and completely equipped plants in the world for the production of "HUDCO" fine wires in all metals.

ESTABLISHED IN 1902

HUDCO

WIRES FOR METAL SPRAYING

Pure Lead, Lead Alloy, Pure Zinc, Zinc Alloy, Copper, Tin, High Brass, Low Brass, Solder Wire, High Conductivity, Electric Wire. Cadmium, Nickel Silver, Aluminum, Monel Metal, Phosphor Bronze, Pure Nickel, Commercial Bronze, Brush Wires, Crimp and Straight, Brass, Steel, Nickel Silver, Copper and Phosphor Bronze.

HUDCO

FINE BARE WIRES

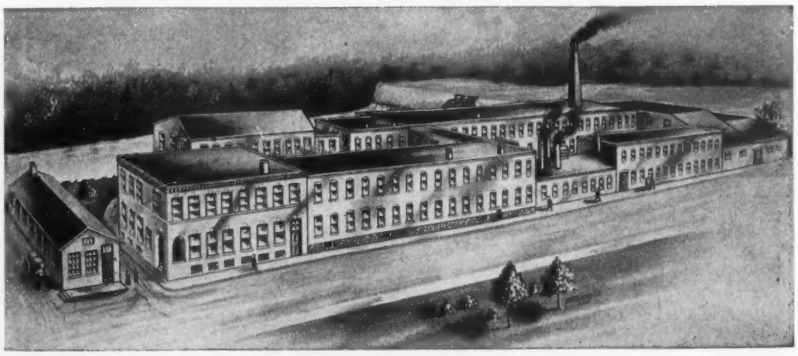
High Brass, Low Brass, Zinc 99.99+ and High Tensile Zinc, Commercial Bronze, Phosphor Bronze, Pure Tin, Lead, Antimonial Lead, Tinsel Lahns, Silver Plated Copper, False Gold and Copper. Cadmium, Nickel Silver, Silver Plated Copper, False Gold and Special Brass and Bronze Alloys to Specification, Metallic Fibre for Packing Purposes, Copper, Bronze, Zinc, Lead and Aluminum.

"HUDCO" specially processed Copper Wire for enamelling purposes is drawn from Selected Copper, insuring the maximum conductivity. This is but one example of the use of the most advanced and approved materials and methods in our processing.

BETTER WIRE AT LOWER COST

Send Us Your Specifications and Let Us Quote Prices

HUDSON WIRE COMPANY • OSSINING, N. Y.



Winsted Division of HUDSON WIRE CO. at Winsted, Conn., modern and completely equipped enamelled wire plant for LEAKPROOF ENAMELLED WIRE and all standard and special coverings.

WINCO

"WINCO" enamelled wire is drawn from special selected copper, assuring perfect enamelling. All wire tested before shipment.

"WINCO" enamelled wire is available in all standard and special coverings made to meet exacting requirements.

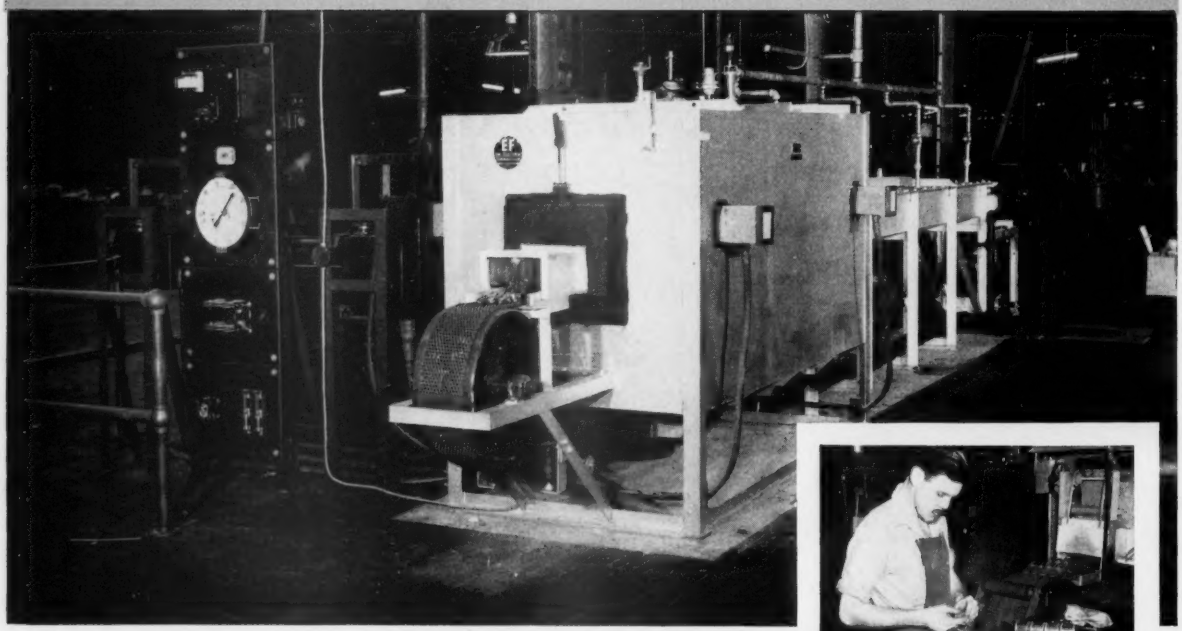
Samples of LEAKPROOF and other enamelled wires sent on request

WINSTED DIVISION OF HUDSON WIRE COMPANY

WINSTED, CONN.

EF FURNACES

For Every Industrial Heat Treating Process



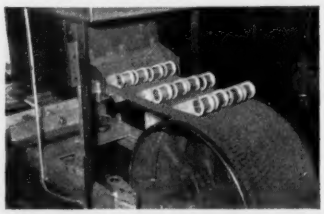
The operator assembles the parts and places them on the furnace conveyors.

Miscellaneous steel assemblies are joined 60 to 75% faster at 1/4 the former labor cost

by the Copper Brazing Process

"Greatly improved results—neater, stronger joints—60 to 75% faster, at about one quarter the former labor cost," that briefly is the report received from the production manager of a prominent midwestern plant after installing the above EF continuous copper brazing furnace for joining some of their steel assemblies.

Within a month after installing their first brazing furnace, a second similar but larger furnace was ordered for joining other products—the illustration at right below shows both furnaces operating side by side, joining all kinds of assemblies,—large and small—neatly, economically and securely.

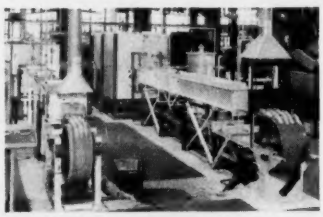


The assemblies are discharged at the other end... all units securely and neatly joined.

Products difficult or expensive to make in one piece can be made in several pieces and joined—thus not only reducing the cost but actually improving the quality and appearance. Products requiring several stampings joined or requiring screw machine parts, forgings and stampings to complete the unit, can be neatly and economically joined right in the production line in your shop.

Any number of joints in the same product or any number of pieces can be joined at one time. The most intricate parts or assemblies are made to actually "grow together," and joints made which are as strong, or even stronger than the original parts. On some parts it is possible to anneal and braze in one operation.

Investigate the brazing process for your products. With slight changes in design you may be able to join your metal parts, neater, cheaper and stronger by this method.



The satisfactory results from the first furnace at left sold the larger furnace at right.

Send for printed matter showing this and other types of EF furnaces.

Investigate the Copper Brazing Process For Joining Your Metal Parts

The Electric Furnace Co., Salem, Ohio

Gas Fired, Oil Fired and Electric Furnaces---For Any Process, Product or Production